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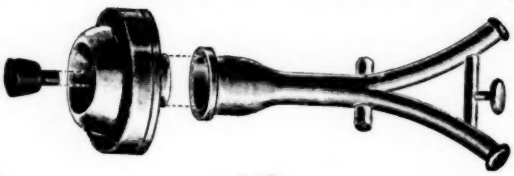

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Delivered before the Royal College of Surgeons of England

BY E. M. COWELL, D.S.O., M.D. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON, CROYDON GENERAL HOSPITAL.

INTRODUCTION.

MR. PRESIDENT AND GENTLEMEN,—The problems of "shock" have occupied the minds of both clinical and laboratory workers for many years, providing always one of the greatest anxieties the operating surgeon has had to face. Much has already been said on this subject and an extensive literature has gradually accumulated. In the present lecture it is my purpose to describe in some detail several observations which I have been able to make on the "initiation," pathogenesis or onset of wound shock in the trenches of the Western front.

The adoption of the idea that no human suffering should, if possible, be allowed to occur in vain; and that every opportunity should be taken by the clinical observer not only to relieve the individual, but also to consider the community at large, has been peculiarly applicable to the particular aspect of war surgery at present under consideration. From the first, in the experience of surgeons on the Western front, the mortality of the wounded from shock has been distressing. The question that occurred to the inquiring medical officer was, first, "What can I do for this case?" and, secondly, "What lines of preventive treatment can I suggest?" Now, we ask ourselves, "How can we apply our knowledge of wound shock to the advantage of civilian surgery?"

Terminology.—In order to avoid confusion in speaking of the condition of "shock" in war surgery I have introduced the term "wound shock."[1] This suggestion has been adopted by Professor W. M. Bayliss[1] and other writers, and has so far not been replaced. Lieutenant-Colonel W. B. Cannon rediscovered the Hippocratic term "exæmia," and has used the word as describing the fundamental pathological principle at work in producing the condition—i.e., the body is "drained of blood."[2] From time to time cases of death from pure shock may possibly occur, but in war surgery I believe no case has yet been reported where it was possible to exclude either macroscopic or microscopic anatomical damage in one of the vital organs. In the cases of shock met with in civil surgery there are almost invariably factors of severe tissue trauma, toxæmia, hæmorrhage, or psychical disturbance present, which our study of wound shock has shown to play such an important part in the initiation of the condition. I have had no personal experience of death from pure "nervous shock." Such deaths, I imagine, do not occur unless there is some latent cardiac weakness.

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During the past three years many clinical notes with blood-pressure observations have been collected from patients arriving in from 2–24 hours at the operating centre (C.C.S.) after being wounded. As a rule, if they were going to develop, the symptoms of wound shock were present on arrival at the hospital, and nothing was known as to the exact order in which they had supervened. It was decided, therefore, to establish the time relations of the onset of the condition.

A series of observation posts was organised, beginning at the various points in the firing line, where the man might be wounded, back through a series of relay stations, until finally he reached the hands of the surgeon. As he passed through each place notes were made on a card attached to the patient, together with details of the pulse-rate and blood-pressure readings, taken by means of a spring sphygmomanometer. I accompanied some of the most important cases through the whole journey, and made records at frequent intervals. At different points of the firing line studies of normal soldiers were made under varying conditions. Occasionally I was able to follow through a case whose blood pressure I had observed shortly before the wound was received. The main result of this work was the classification of the shock cases into primary and secondary, the details of which will be referred to later.

PHYSIOLOGICAL STUDIES OF THE FIGHTING SOLDIER.

In order to investigate the factors which might be present before the man was wounded, and which might predispose to wound shock, I spent some time living in the trenches, watching the soldier under different circumstances, and taking blood-pressure observations as often as possible. The average maximum systolic pressure was found to be 110–125 mm. of mercury and the diastolic or minimum 75–80 mm. In the unwounded the variations were those of hypertension, and were generally found in men subjected to stress or excitement.

Perhaps one ot the most fascinating subjects in physiology is the study of the reaction of the body to excitement. Of the psychical stimuli which result in extensive physiological processes, that of the excitement of battle probably comes first, converting the normal human machine into a fighting mechanism. Cannon,[4] and also Elliott,[5] found that, as the result of excitement in cats, sympathetic stimulation set free adrenalin, which could be detected in the circulation soon after the initial stimulus was applied. The main effects of this circulating adrenalin are to increase the heart-rate, raise the blood pressure, set free glucose from the liver in response to the demand of the muscles for more foodstuff, inhibit the movements of the alimentary canal, and diminish the coagulation time of the blood. The utility of these bodily changes is obvious, enabling the man to do more muscular work, withstand fatigue longer, and, in the event of his being wounded, hastening hæmostasis. As will be shown later, it is possible, however, that the secretion of adrenalin over a prolonged period may be harmful, and that prolonged excitement may prove to be one of the factors in the initiation of wound shock. The observations I have been able to make on the effects of excitement on soldiers show that a stimulus such as exposure to the danger of enemy fire, produces a reaction which, as might be expected, varies greatly according to the individual. Intellectual development, temperament, habitual exposure to danger in war or civilian occupation, and fatigue, all have a bearing on the physiological reaction as estimated by the sphygmomanometer. The effect of temperament is shown in the following cases.

At 2 A.M. on a dark night in the autumn I was able to collect records from sick men in a battle aid-post situated in a well-known sector of the line. (Fig. 1.) The men under observation were all slightly wounded and had just dropped back into the trench after having "gone over the top" on a raid. The artillery and machine-gun fire to which they had been exposed was severe. The men were, in civil life, farm labourers of particularly phlegmatic temperament.

No. 1.—A slight wound of the face. The man took everything as a matter of course, and sat quiet without speaking. Pulse 76. B.P. 115 mm.

No. 2.—Bullet wound of the hand; some pain. This man was talkative; later sang and showed signs of mild excitement. Pulse 126. B.P. 130.

The other four men had all come in at the double and were panting when first seen. Pulses and respirations slowed quickly on resting.

No. 3—Slight wound of chin. R. 36. P. 144. B.P. 115.

No. 4.—Perforating bullet wound of arm. This man was rather pale, but was quite cheerful, and had not lost blood. Pulse 120. B.P. 120.

No. 5.—Slight bomb wound of the buttock. P. 124. B.P. 115.

No. 6.—Slight wound of the face. This man was of less robust physique than the others and looked in a bad way, with a pale face and weak voice. He wanted to lie down, having given in completely. There was no serious wound to account for this. P. 112. B.P. 120.

Observations on Garrison of a Detached Outpost.

A few weeks later I was able to take advantage of the full moon to collect blood-pressure records of a garrison of a detached outpost situated in a new part of the line that was somewhat exposed. The men were organised into a series of posts, where they had been on duty for four nights and four days, with only brief snatches of sleep in the daytime. The nights were cold, and although the men were well fed, the water ration was only 10–15 oz. per man per diem. The following figures were written down in the order in which the readings were made. When the enemy fire came within a few yards a note was made as shown on the chart. (Fig. 2.)

Post.	B.P.	Remarks.
1	118–80 126–90 116–80	Quiet.
2	120–80 116–75 140–80	Fairly quiet.
3	150–90 150–90 150–80 140–70 140–70 160–90 (*a*) 140–90 (*a*)	In sap leading to enemy's lines. (*a*) Two last men just knocked down.
4	118–70 140–90 140–80 150–90 (*b*) 130–90 130–90 140–90 120–90 (*c*)	Quiet, but not very far away from 3. (*b*) N.C.O. in charge. (*c*) O.C. on his round.
5	120–80 120–80 120–90 126–76 128–75 130–90 (*d*)	Quiet. (*d*) Sergeant.
6	136–85 120–80 120–80 140–80 120–75 150–80 110–60 120–65	Quiet. Several Verey lights.
7	110–80 (*e*) 120–60	(*e*) Two years in the line.
8	138–80 130–75 120–85 130–90 130–80 124–70 (*f*) 136–70	Important M.G. position. (*f*) Very cold.
9	140–90 130–80 110–60 120–90	Slightly active.
10	160–90 150–90 120–70 104–70 (*g*)	Sentries at Coy. Hqrs. (*g*) Two years in the line.
11	118–80 130–90 116–60	Stretcher-bearers and guide.
12	130–90 140–90 118–80 140–90	Patrol party after 1½ hours march in the trenches.

The evidence provided by these readings seems to afford clinical support to the experimental observations of Cannon and Elliott, already referred to. It will be seen on examining the chart that at the posts where there was special danger there the men were found to show the greatest reaction. A large number of blood-pressure observations were taken of men of all ages and regiments in different parts of the forward areas in quiet times. The average was found to be 125–110, or even lower occasionally. For the sake of comparison I have picked out at random the blood pressures of 12 groups of men and plotted them. (Fig. 3.)

BLOOD PRESSURE IN THE WOUNDED.

At the present I am dealing only with observations made in the line, as soon as possible after the man was hit. For readings made on later cases I must refer to the paper written by Fraser and myself in 1917. In the trivial wounds, while transient psychical disturbances sometimes result and the man becomes momentarily faint, the hypotension does not exist long enough to be measured. On the other hand, in slight wounds the pressure is more often raised. For example, a strong healthy young gunner was slightly wounded with a few shell splinters. He walked to the dressing-station and was seen half an hour later. His face was flushed and his pressure was 180–100. Twenty minutes later it was 160–90, an hour later 126–80. His colour was now normal and he was sleepy. (Fig. 4.) Examination of large numbers of wounded make it possible to divide wound shock into primary and secondary varieties.

Primary Wound Shock.

Serious wounds do not always produce shock. Where, however, the damage sustained by the body is such that anatomical death must supervene unless surgical intervention is possible or available, the pressure falls with great rapidity and the symptoms of wound shock are found to have become established as soon as the patient is seen. In war surgery, at any rate, it is doubtful if such a state of affairs ever occurs apart from hæmorrhage. To this class of case I have given the name "primary wound shock."[3] It is an unavoidable condition, but one which in favourable cases may be kept from progressing and later terminate in recovery.

The following illustrative cases of primary wound shock may be quoted:—

(1) An ambulance driver, as he stepped off his car on arrival at the dressing-station one bright sunny morning, was hit in the abdomen by a shell fragment. He fell down, was carried in, and put on the dressing-table at once. As he was being attended to he drew the attention of the medical officer to his profuse sweating. I saw him 30 minutes later as he passed the next relay post on his way to the operating centre. He then complained of severe pain, looked pale, and was still sweating profusely. His hands were cold and clammy, pulse 96, pressure 100–70. On arrival at the clearing station an hour later his pulse was only 100, but the pressure had further dropped to 82–70. Operation was immediately performed, hæmorrhage stopped, and ten rents in the bowel repaired. The man's condition was serious for some hours, but he responded to treatment and eventually recovered. (Fig. 5.)

(2) On a cold, wet, muddy night a man was seriously wounded by a shell while digging a new trench. He was brought to the advanced dressing-station 50 minutes later and found to have sustained severe multiple wounds, including compound fractures of femur and humerus. The exposed lacerated muscle looked like dead tissue, there were no vessels of any size bleeding, and hardly any capillary oozing. The blood pressure was 40 mm. Mentally the patient was quite bright and responsive, so that the medical officer in charge of the case remarked how wonderfully fit he was. The man was dead, however, within the hour. (Fig. 6.)

Secondary Wound Shock.

In a large proportion of the serious wounds symptoms of shock supervene after the lapse of some hours. Early observations showed no alteration in pulse-rate or blood pressure level. During the next few hours, however, in the presence of certain factors, the pressure was found to fall, the pulse-rate to rise, and the state of shock to become established. To these cases I have given the name "secondary wound shock." I will first describe two cases where wound shock did not develop, although its onset might have been expected.

(1) One dark night the driver of a gun team was hit in the abdomen by a small shell fragment. He got off his horse to make inquiries for the dressing-station, and then rode nearly a mile before being seen by the medical officer. He was then quite fit, with a blood pressure of 130, which did not drop either before or after admission to hospital. At the operation two small rents in the small bowel were found and sewn up.

(2) One evening a man on a ration party was hit in the thigh by a shell fragment at the moment he was passing the entrance of the aid-post. He was carried down a few seconds later and found to have sustained a compound fracture of the femur. I found his pressure 120–80 and pulse-rate 72. He was immediately splinted and sent on to the dressing-station, where he remained under observation for six hours, and finally reached the casualty clearing station without at any time showing hypertension. (Fig. 7.)

In the next two cases the wounds were by no means serious in themselves, but secondary wound shock developed.

(3) A man belonging to the garrison, whose pressures are recorded in Fig. 2, was wounded by a bomb which partly shattered the forepart of his foot and sprinkled his neck and shoulder with tiny fragments. His chum, standing by his side, was killed. The blood pressure, which was 110–70 a short while previously, was still the same immediately after he was wounded. It was a cold night, with a chilly wind, and as the man was carried shoulder high along shallow trenches winding over a hill he became colder and colder. At this time, too, there was occasional enemy activity. By the time he reached the aid-post, an hour and a half later, he was pulseless. Two hours later, when examined at the next post, he was still pulseless and a serious view was taken of his condition. He was hurried on to the casualty clearing station, where he arrived with a pressure of 80–65 and no palpable pulse. After being warmed up in bed the pulse soon returned and the shock passed off in the absence of any heroic measures of treatment. (Fig. 8.)

(4) Early one night in October a young soldier on a wiring party sustained two simple perforating machine-gun bullet wounds through the fleshy part of the thigh. There was no extensive laceration of the muscles and no hæmorrhage. After a two hours' carry in the cold I saw him at the aid-post. His condition appeared grave, his face was pale and cold, with blue lips and anxious expression. He complained greatly of thirst, presented a small, thready pulse and a blood pressure of 70–50. He was given a hot drink, well wrapped up, and sent on. In the next hour, while continuing his journey under these conditions, he recovered so well that the medical officer who made the next observations could not understand why I had been so anxious about the patient. By this time the pressure had risen to 120–80 and did not fall again. (Fig. 9.)

The following cases deal with amputation of limbs by gunshot wounds and the question of toxæmia playing a part in the onset of shock.

(5) When going down a communication trench about two o'clock one morning, I met a stretcher party carrying a man with his leg blown off. At the aid-post the patient was found to be a strong burly lance-corporal with some reputation as

a boxer in the battalion. He had been wounded about an hour before by a trench mortar, which had carried away his left leg a hand's-breadth below the knee, and at the same time severely injured the right tarsus. He lay quite calmly on his stretcher, and answered questions readily. The pulse was 96, and the systolic pressure 115. None of the symptoms or signs of shock were present; what little hæmorrhage there had been had stopped. The man was warmed, given as much cold water as he wanted, had his wounds dressed, was well wrapped up, and then sent on his journey. I followed him for the next three hours and took frequent pressure readings. When I left him his face had become flushed and the pulse-rate had crept up to 120, but the pressure remained level at 114–70. On arrival at the casualty clearing station an hour later his pressure had fallen to 88–62 and the pulse-rate risen to 144. The muscles of the stump were found to show signs of gas gangrene. After reamputation his condition improved, and he eventually recovered. (Fig. 10)

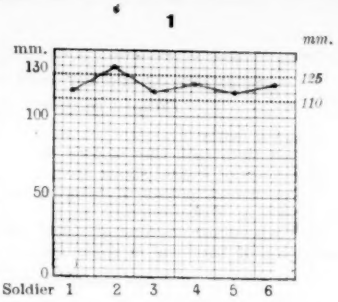


Chart of blood pressure of six phlegmatic soldiers after a trench raid.

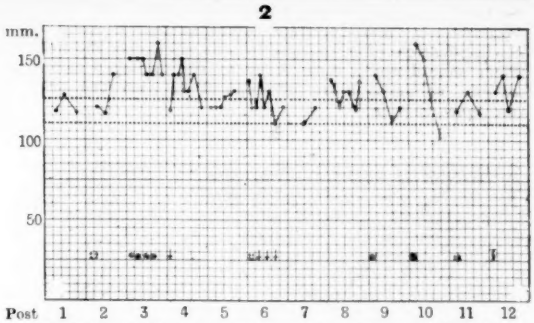


Chart showing blood pressure records under stress. ‡ Machine gun bullets. * Rifle grenades. ‡ Very lights. § shell.

Note.—The dotted lines on each chart at *110* and *125 mm.* indicate the normal limits of blood pressure.

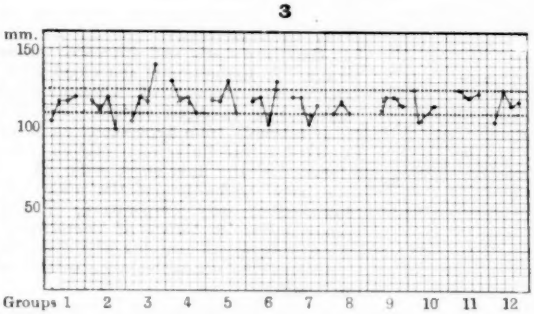
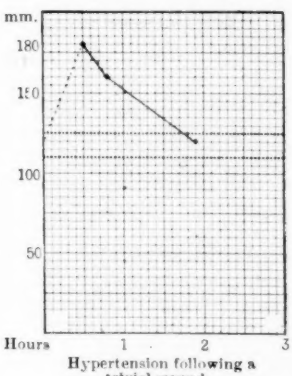
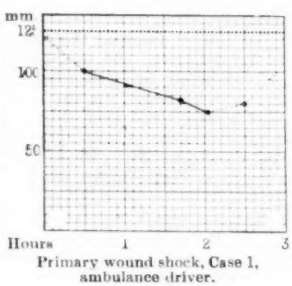


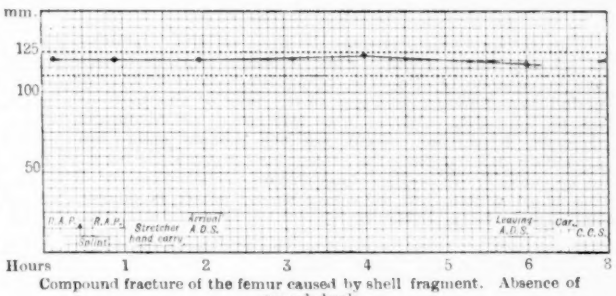
Chart showing blood pressure of soldiers at rest, in groups picked out at random.



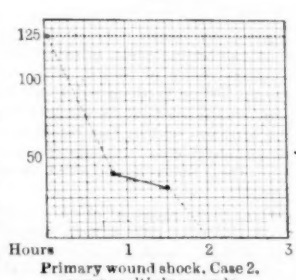
Hypertension following a trivial wound.



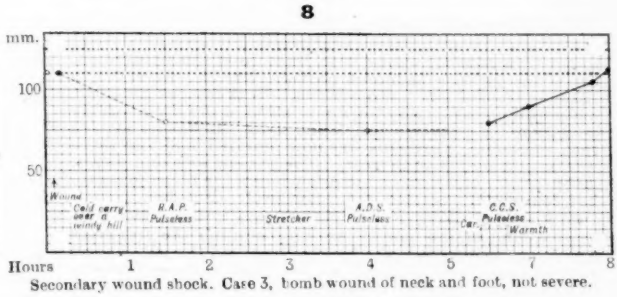
Primary wound shock, Case 1, ambulance driver.



Compound fracture of the femur caused by shell fragment. Absence of wound shock.



Primary wound shock, Case 2, severe multiple wounds.



Secondary wound shock. Case 3, bomb wound of neck and foot, not severe.

This case I regarded at the time as an example of bacterial toxæmia. McNee[1] and others have drawn attention to the speed at which anaerobic infections may become established and produce their potent effects. Recent work by Bayliss and Cannon,[1] which will be discussed in detail later, introduces the possibility of a new factor, that of absorption of the toxic products resulting from disintegration of muscle tissue apart from infection. In this, if immediate amputation had been performed, or at any rate a ligature tied round the stump to prevent absorption, the secondary wound shock would in all probability have been averted. In the next case this principle of treatment was adopted with success.

(6) A strong muscular soldier received a severe shell wound of the left arm, shattering the humerus. Within a short time the medical officer in the trenches, who was familiar with the view expressed in the preceding paragraph, saw the man and performed immediate amputation under an anæsthetic, thereby removing all the traumatised tissue. Four hours later I saw the patient at the next relay post. He was pale but quite fit, with a maximum blood pressure of 140 and a pulse-rate of 90.

It has been frequently noted clinically that a patient under operation for removal of a shattered limb would show an increase in pulse-rate and respiration with lowering of

the blood pressure a few minutes after the tourniquet had been relaxed. Latterly we have taught that in cases where the application of a tourniquet was necessary the medical officer should apply it as near to the damaged tissue as possible, so as to allow of amputation with the original tourniquet in situ.

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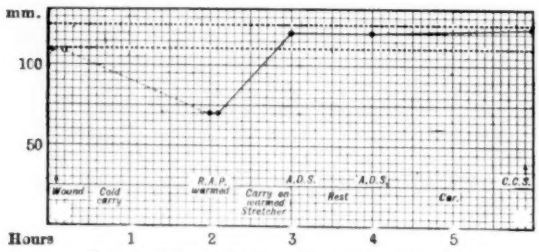

Secondary wound shock, rapid recovery. Case 4.

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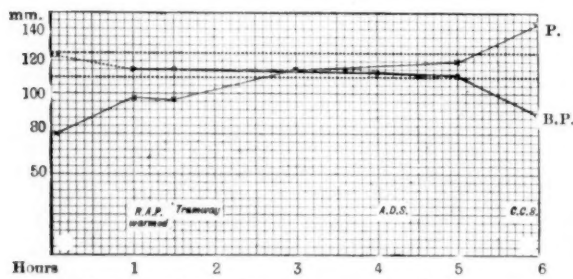

Gunshot wound of leg. Amputation, secondary shock with onset of toxæmia. X = pulse-rate. • = blood pressure.

Relation of Primary to Secondary Shock.

Fig. 11 [8] shows diagrammatically the possibilities in a case of primary wound shock. From a practical point of view the importance of closely watching the patient during the period immediately subsequent to the onset of shock cannot be too urgently insisted on. Otherwise the favourable moment, B, will be missed, and the primary merge into secondary shock without the patient being given the benefit or opportunity of surgical intervention. The behaviour of the blood pressure in secondary wound shock is charted diagrammatically. (Fig. 12.)

Aggravation of Wound Shock by Surgical Operation and Other Factors.

Marshall has published records of the blood pressure in the wounded during operation.[10] Here are a few illustrative charts from my own cases.

(*a*) This patient came into the hospital within 20 hours of receiving a gunshot wound with fracture of the right fibula. On admission the maximum pressure was 130, which fell to 120 at the end of the first operation. Next day gas gangrene developed, necessitating the amputation of the limb. After operation the pressure had fallen to 80. It was recognised that the cause of toxæmia was now removed, and that there was no hæmorrhage to treat. The patient was kept warm, given plenty of fluids, and in a few hours the blood pressure had completely regained its former level. (Fig. 13.)

(*b*) S.-Major —— was admitted 12 hours after sustaining a shell wound of the thigh. At the operation the fragment was found to have torn the femoral vein, and the patient lost a certain amount of blood before the vein could be sufficiently exposed to be sutured. The pressure fell from 118 to 90 mm., and in this case was immediately restored by an intravenous injection of gum saline. Fifteen hours later the shock-like condition, so often associated with the presence of gas gangrene infection, was observed. This necessitated excision of the affected muscle (sartorius) and a further intravenous injection of the gum saline. (Fig. 14.)

(*c*) During operation in gunshot wounds of the abdomen a fall of blood pressure may be produced by one of three conditions, as Marshall has pointed out.[10] 1. Manipulation of gut or omentum outside the abdominal cavity. 2. Occurrence of copious hæmorrhage. 3. Change of posture at the end of operation from dorsal to lateral. Reference to Fig. 15 illustrates the last-named cause of sudden drop in pressure. This observation was made before I was aware of the possibility of such an occurrence.

SUMMARY OF RECENT INVESTIGATIONS.

Clinical Observations.

From the early clinical studies, which have already been described in detail, the factors which predominate in the pathogenesis of wound shock are:—

(1) Pre-wound factors of fatigue, exposure, lack of fluids, and presence of excitement.

(2) Post-wound factors of pain, hæmorrhage, cold, and absorption of bacterial or tissue toxins.

Pathological Studies.

The idea that the origin of shock was entirely due to the action of unknown psychical disturbances and vague nervous influences producing vaso-motor disturbances, which required to be controlled by such measures as the wearing of pneumatic suits, is now replaced by a more definite pathological picture. Recent investigation shows that in addition to arterial hypotension the following series of definite facts may be demonstrated in an established case of shock. 1. Capillary stasis and increased permeability of the vessel walls. 2. Reduction of the blood volume following hæmorrhage and factor (1). 3. Absorption of toxic products from infected or damaged tissues, or both combined. Possibly also toxæmia from hypersecretion of adrenalin. 4. Diminution of intracellular oxygenation, leading to irrecoverable damage of the finer nerve cells. 5. Presence of acidosis in the blood (reduction of the alkali reserve). 6. Profound lowering of body temperature. 7. Toxic action of certain anæsthetics. 8. Effects of hæmorrhage. The above factors form a symptom-complex of the nature of a vicious circle, rendering the condition once established extremely difficult to combat.

Examination of the body after death has revealed little of importance. The observations that are of value have been made by laboratory workers, who have been able to keep in close touch with the operating theatre, resuscitation, and post-operative wards.

(1) *Capillary stasis and permeability.*—Sherrington and Monkton, in 1893,[11] observed the concentration of the blood in shock by measuring the specific gravity and finding it increased. Marshall, in 1916, found that the hæmoglobin percentage was increased in the blood in cases of shock. Cannon and Fraser confirmed this in 1917, and found evidence of concentration of both systemic and capillary blood. The curve shown in Fig. 16 illustrates how quickly the pressure drops as fluid leaves the circulation in established shock.

(2) *Reduction of blood volume.*—N. M. Keith, and later O. H. Robertson, measured the blood volume directly by the vital red method, and have been able to construct curves of concentration and subsequent dilution of the blood during the period of recovery. This work has brought forward evidence as to the way in which fluid is best absorbed by a patient with a low pressure. "Forced fluids" given by mouth or rectum (O. H. Robertson) are often as efficacious as when administered intravenously. It is doubtful, in cases of shock with low pressure, whether subcutaneous saline is absorbed at all unless the condition is not severe or the patient is already recovering. This work solves the problem of the lost blood in shock. At any rate, in an established case the blood is not "pooled" in the splanchnic area, but is diminished in quantity because of its concentration.

(3) *Various toxic causes of shock.*—Clinical evidence for the support of the adrenalin theory has already been produced. (Fig. 2.) Experimentally Cannon and also Elliott [4 5] have demonstrated the presence of adrenalin in the circulating blood of animals under emotional stress. Bedford [7] has been able to show the presence of adrenalin in the blood of animals suffering from experimental shock. Bainbridge and Trevan [6] found that intravenous injection of small doses of adrenalin into an animal after 20 minutes induces the same concentration of the blood already described.

Dale's "histamine shock" opens up a large field of thought. Dale and his co-workers found that suitable doses of histamine (10 mgm. for a large cat) produce a profound drop in blood pressure, with capillary stasis and

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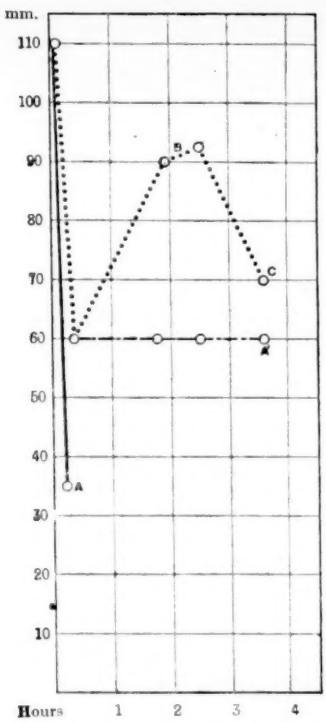

Primary wound shock curves (diagrammatic). Following a severe anatomical injury, instant wound shock may develop, which may be fatal in a shorter or longer time, as shown at A or A'. Under favourable circumstances the pressure may rise to B, dropping later to C. At this point the primary has merged into secondary wound shock.

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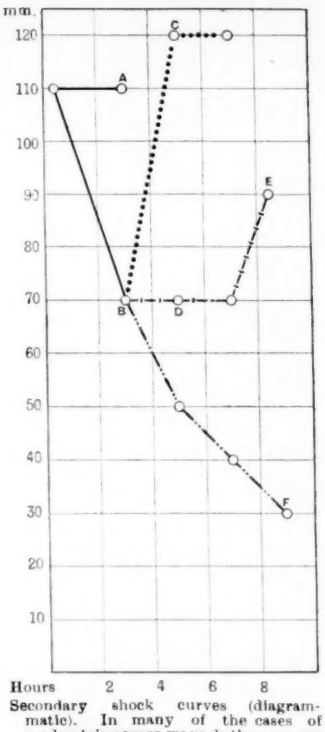

Secondary shock curves (diagrammatic). In many of the cases of moderately severe wounds the pressure will remain level at A. In others it falls with the establishment of secondary wound shock, B. At this point the patient may react quickly to treatment, C, or after more prolonged treatment at D, to E. In the absence of favourable circumstances, the pressure goes steadily down, and the case terminates fatally in from 12-24 hours, F.

subsequent concentration of the circulating blood. Smaller doses produce a vaso-dilation, for which evidence is produced to show that it is capillary in origin.[15] This work deserves consideration in conjunction with Bayliss's investigations on muscle trauma. Bayliss and Cannon[1] found that within an hour after producing a compound fracture of the femur in an anæsthetised cat signs appeared similar to those seen in secondary wound shock. The pressure gradually went down, pulse-rate and respiration increased, the blood became concentrated, and finally the animal died. This occurred just as rapidly when the limb was isolated from

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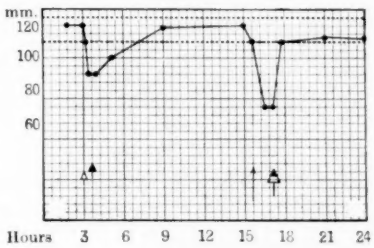

Hypotension associated with (1) hæmorrhage, (2) toxæmia. The triangle indicates operation, hæmorrhage; the next sign, injection of gum saline. The arrow denotes onset of gas gangrene; following sign, operation + gum saline.

the central nervous system, so that the possibility of its being due to the transmission of harmful afferent stimuli was negatived. When, however, the returning blood stream was interrupted no lowering of the pressure resulted, and the animal remained in good condition until the clips on the vessels were removed. As soon as the returning blood reached the body, down came the blood pressure. It is probable that some tissue poison is set free from the traumatic myolysis which has resulted, producing effects like histamine. This experimental work confirms the clinical observations made on the human subject. Two years ago I tried, unsuccessfully, to stop the onset of shock by inducing regional anæsthesia (nerve blocking).

(4) *Intracellular suboxygenation.*—Mott[17] has examined the brains of cases of fatal wound shock, and found evidence of early cytolysis of certain of the cells of the cortex and basal nuclei. These, however, he considers secondary to the low blood pressure

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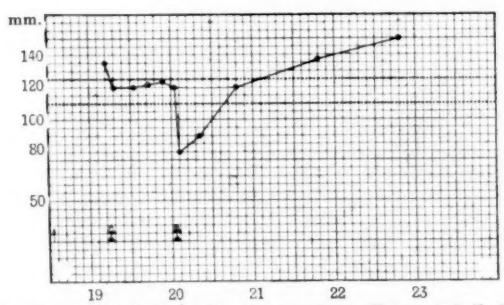

Primary surgical shock, spontaneous recovery. The arrow indicates receipt of wound, and the other signs (1) operation and (2) amputation for gas gangrene.

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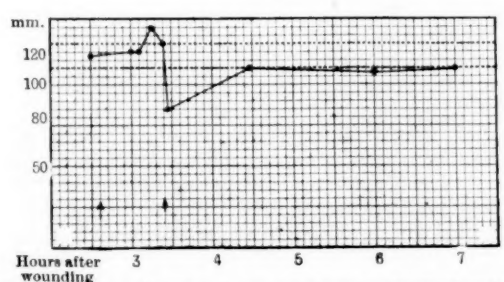

Chart showing sudden drop in blood pressure on change of posture, denoted by second arrow. Operation indicated by first arrow.

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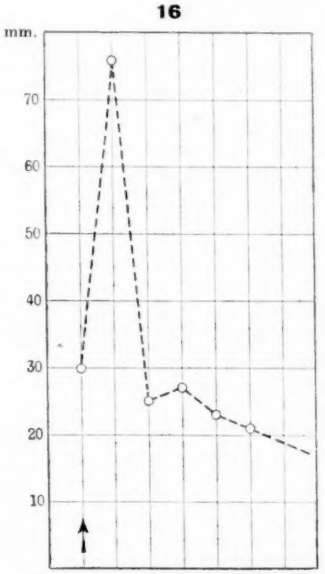


Chart showing blood pressure on admission (denoted by arrow); immediate administration of two pints of normal saline followed by rise and rapid fall of blood pressure, death at 4.30 A.M.

and not of primary origin. From clinical experience after the maximum pressure has remained at 60–70 mm. for from 4–6 hours, the patient cannot, as a rule, be resuscitated, even by blood transfusion. The damage to the finer cells from lack of tissue oxygen has been too great; in other words, the process of tissue death has advanced too far for recovery to take place. Haldane has suggested pushing the oxygen treatment. But even if pure oxygen were breathed the plasma will only carry 2 per cent. more oxygen than normally. Practically the treatment with oxygen has not been successful. Morphia, by depressing the respiration, increases cyanosis, especially in patients after hæmorrhage. Experience has shown that such cyanotic shock cases react extremely badly to ordinary methods of treatment, and the only possible way of increasing the oxygenation of the body is to give more oxygen-carrying material in the shape of hæmoglobin by blood transfusion.

(5) *Acidosis (acidæmia Wright).*—In 1917 a number of observations were made by Cannon,[17] using the v. Slyke apparatus, on the alkaline reserve of the blood in the wounded with low blood pressures. These findings were confirmed by others on cases of experimental shock. Since the alkali reserve was found reduced in direct relation to the drop in pressure, the question immediately arose as to whether this might not be one of the primary causal factors. While this was being decided experimentally, alkaline intravenous therapy was practised, undoubtedly with benefit in certain cases. This important question has now been settled and is fully discussed in Report No. 7 of the Shock Committee.[18] The results of the various sets of experiments may here be summarised.

(i) "Simple acidosis" in the sense of a reduction of the alkali reserve of the blood, even though it be severe and prolonged, does not cause shock, or indeed, any perceptible impairment of the circulation or other vital organs in the otherwise normal animal at rest.

(ii) In the case of animals subjected to hæmorrhage, histamine shock, injection of adrenalin or peptone, there was no evidence of the symptoms being modified by acidosis.

(iii) Experimentally in dogs it has been found (Cannon) that the pressure could be kept at 80 mm. for an hour without a reduction in the alkali reserve. Below 60, however, a reduction always occurred. After a 20 per cent. hæmorrhage a pressure of 80 mm. in an hour reduces the alkali reserve—i.e., produces acidosis. This evidence agrees with clinical observations already quoted.

(iv) Evidence is adduced by Wright and others[19] showing that the toxæmia of gas gangrene is accompanied by an acidosis.

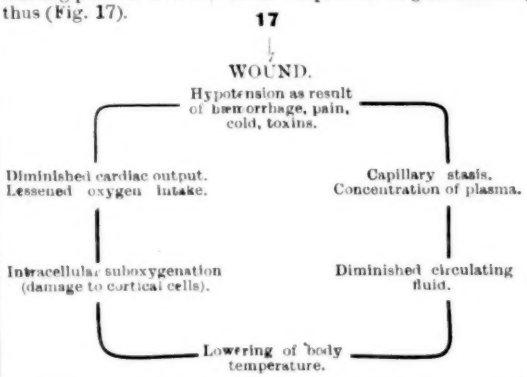
Therefore, from a practical point of view, the acidosis is merely to be regarded as a symptom of the lowered blood pressure and defective circulation. If steps are taken to improve these the acidosis disappears. The benefits claimed clinically from hypertonic alkaline treatment would probably have been more striking if gum-saline had been used instead.

(6) *The body temperature in shock.*—Sufficient emphasis has been laid on the ill effects of cold. During a surgical operation, not only is the quantity of heat lost by the surface of the body increased, but the heat production itself is diminished. In a series of wounded presenting low blood pressures, the temperature taken of the interior of the thigh muscles was found to be as far below the normal as 94° F. and even occasionally lower. In this connexion it is interesting to note that Peter Lowe, writing on shock early in the seventeenth century, describes the condition as being due to loss of "vital heat."[20]

(7) *The toxic action of certain anæsthetics in shock.*—In the light of what has already been said on the lack of sufficient circulating fluid and deficient oxygenation of the tissues, it is obvious that the greatest care must be taken to avoid further depression of external or internal respiration. Buckmaster[21] concludes that chloroform combines with the corpuscles and directly interferes with their function of transporting oxygen from the lungs. One would expect a similar action with ether, but I believe this has not yet been worked out. Gas and oxygen anæsthesia, as advocated by Crile, Boyle, Lockhart-Mummery, Marshall, and others, does not possess this disadvantage, and either by itself or combined with some form of nerve blocking, is the only anæsthetic justifiable in all cases where hypotension exists.

(8) *Effects of hæmorrhage.*—Enough has already been said to show how serious is this factor. The circulating fluid in shock is becoming diminished all the time and any further loss is not only felt directly, but speeds up the concentration process. O. H. Robertson considers that with a total hæmoglobin reduced to 25 per cent., transfusion (of blood) is indicated.

Any one of the above-mentioned factors may become the starting point of a vicious circle—expressed diagrammatically thus (Fig. 17).


17
WOUND.
Hypotension as result of hæmorrhage, pain, cold, toxins.
Diminished cardiac output. Lessened oxygen intake.
Capillary stasis. Concentration of plasma.
Intracellular suboxygenation (damage to cortical cells).
Diminished circulating fluid.
Lowering of body temperature.

Gas.—There is a condition which clinically and pathologically closely resembles that seen in shock—i.e., that found in men suffering from the effects of poisoning by a gas such as phosgene. Here the man is prostrated, blue and cold, with a weak pulse and low pressure. The same phenomena of blood concentration and increased viscosity are also present. A few of the cases of wound shock are undoubtedly complicated by gas poisoning; but for the most part gas does not play a practical part in the causation of shock.

COMPARISON OF WOUND SHOCK AND SURGICAL SHOCK.

Just as wound shock may be produced in a few minutes (primary wound shock), so in certain rare instances surgical shock may develop as the result of a sudden nerve stimulus, with or without hæmorrhage, or in an operation probably in association with an unsatisfactory state of anæsthesia. These instances are uncommon, and show themselves as cases of cardiac weakness or inhibition, demanding special treatment, such as cardiac massage.

The bulk of the cases of surgical shock, however, correspond to the common variety of wound shock—i.e., the secondary shock—the pressure falling towards the end of operation or even after the patient has been returned to bed. Undue anxiety, chilling, pre-existing bacterial toxæmia, or hæmorrhage are all pre-operative factors to be taken into consideration. During the operation further loss of heat, the amount and nature of the anæsthetic employed, the question of hæmorrhage, and, most important, the amount of trauma to which muscle tissue is subjected, all play a part in the production of secondary surgical shock.

With regard to tissue trauma, as Major-General Wallace has pointed out, the amount of shock resulting from a forequarter amputation, where the limb is removed along tissue planes, and where only a small muscular mass is divided, is, as a rule, small compared with the amputation through the hip-joint, where large muscular masses are traumatised. The beneficial effect of regional or spinal anæsthesia may, perhaps, be explained on these lines. There is complete relaxation, permitting of the handling and retraction of the muscle substance with the least amount of bruising and damage. The handling of the more important organs does not in itself necessarily produce shock. I have taken continuous pressure readings while the lung was being "exteriorised" and the hilum dragged on, without being able to detect any tendency to hypotension.

Asphyxia pallida neonatorum.—Buried under the obscurity of this ancient term is a variety of surgical or traumatic shock, to which very little attention has been paid. Here, for example, after being half-crushed and severely bruised in a case of difficult labour, the little patient is pale and flabby, with weak heart-beats and a failing circulation. In fatal cases hæmorrhages may be demonstrated in the muscles as well as in the viscera, all pointing to tissue trauma (Spencer). It would be interesting to know what changes are present in the circulating blood. Clinically such cases

react well to warmth, the application of which in the form of a hot bath has been customary for many generations. In addition, in severe cases I found in 1910 that even normal saline injected intravenously often produced a rapid improvement. It is possible that Bayliss's gum saline, cautiously given in small doses, may prove of even greater value. The technique of intravenous medication in the new-born is simplified by the fact that the umbilical vein is patent and available, at any rate for the first half-hour of life. This method of treatment is probably widely practised, but I have been unable to find it referred to in the literature.

PRESENT CONCEPTION OF SHOCK.

J. P. Lockhart-Mummery, in his Hunterian lectures, 1905,[20] defined shock as a condition "resulting from a fall in general blood pressure due to exhaustion of the vaso-motor centre," and distinguished shock from collapse, where the "fall in general blood pressure is due to inhibition of the vaso-motor centre or loss of circulating fluid." In addition to the confusion arising from such a distinction there is no physiological evidence upon which such theories can even be based. If any difference in meaning is made use of between shock and collapse it should be one of time relationship rather than anything else. At the present time the term "collapse" is used to describe the symptom-complex resulting from the effects of more or less prolonged rectum. If the pressure does not quickly rise gum saline is given intravenously. When it is thought that actual loss of blood is the chief factor, then transfusion of whole blood should be carried out with as little delay as possible. By these means the patient's condition can be sufficiently improved to allow of the surgeon performing anatomical repair and getting rid of toxic material.

3. During operation in such cases, or where the anatomical interference contemplated is at all extensive, the surgeon should insist on gas and oxygen either alone or combined with regional anæsthesia. During the operation a falling pressure may be counteracted by giving 500–1000 c.cm. 6 per cent. gum solution in normal saline. There is no evidence of any permanent benefit following the injection of pituitrin, adrenalin, ergot preparations, atropine, caffeine, camphor, strychnine, or any of the numerous drugs recommended from time to time.

[Drawings and diagrams were here shown illustrating some of the methods of treating the early stages of wound shock, as interesting some who have not had the privilege of treating the soldier in the trenches or on the battlefield.] (Fig. 18.) The greatest interest has been displayed by officers and other ranks of the R.A.M.C. since the commencement of the antishock campaign. In the latter days of trench warfare it was not possible to go into any well-established dressing-station, whether it was a converted

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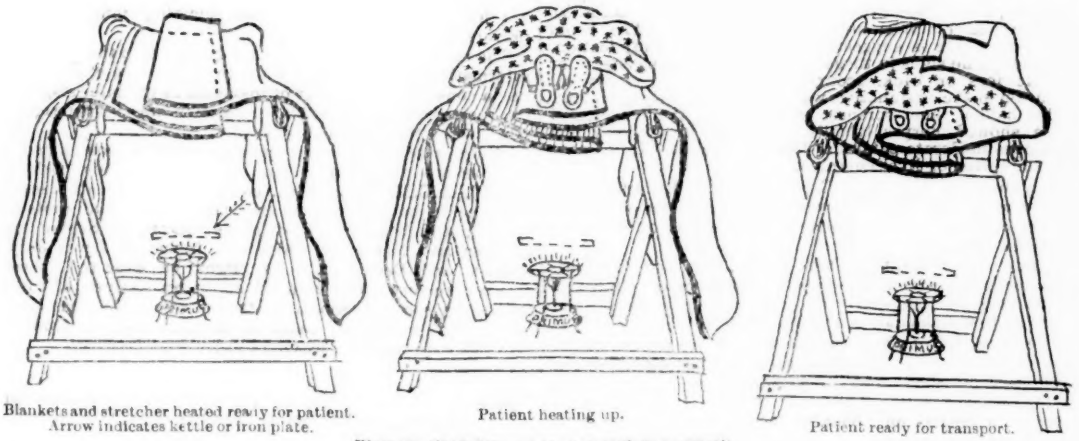

Blankets and stretcher heated ready for patient. Arrow indicates kettle or iron plate.

Patient heating up.

Patient ready for transport.

Diagrams illustrating method of applying warmth.

low blood pressure (Bayliss). Any vaso-motor disturbances that may be detected are transitory and of infinitely less value than the loss and concentration of circulating fluid. I would suggest from the practical standpoint the view that, with given causal factors, while primary shock is generally inevitable, secondary shock is mainly preventable. Reference to Fig. 18 will explain diagrammatically the present conception of shock and explain the symptom-complex.

General Management of the Case.

It was said in criticism of the papers by Cannon, Fraser, and myself[3] that the discussion of treatment was meagre when compared with the chapters devoted to clinical and pathological study. But once our knowledge of a morbid process is brought on to a sound clinical and pathological basis the application of therapeutic principles follows as a matter of course.

From what has been previously said, the surgeon in treating shock should bear in mind the following points.

1. The psychical aspect of the case. Any undue apprehension or excitement should be allayed by quiet persuasion, suggestion, or by the use of small doses of morphia if necessary.

2. The loss of circulating fluid and body heat. In preparing a case of shock for operation what has come to be known in war surgery as "resuscitation" is carried out. Warmth is applied by the most suitable means at hand, while the patient is made as comfortable as possible and allowed to rest. Fluids are freely supplied by mouth or "pill-box," brewery cellar, or deep dug-out, without finding a well-organised method of combating wound shock.

In conclusion, I have to thank the authorities of the Royal Army Medical Corps for their ready assistance in making it possible for me to carry out these observations. Major-General Sir Cuthbert Wallace, K.C.M.G., C.B., Professor Bayliss, Dr. Dale, and the members of the Shock Committee, I wish to thank for their heloful advice. To Major-General Sir H. N. Thompson, K.C.M.G., C.B., D.S.O., I wish to express my gratitude for his sympathy and courtesy in giving the greatest possible help. Finally, I wish to thank the President and Council of the College for the honour of allowing me to have brought before you a subject so largely of interest to the military surgeon.

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JAUNDICE AMONG THE BRITISH TROOPS IN NORTHERN ITALY.

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Note by H. H. T.

IN August, 1918, I saw with Captain H. G. Broadbridge, R.A.M.C., who was in charge of the "Signal Schools" Hospital at Valsanzibio, about 25 km. south of Vicenza, a group of ten cases from the signal schools camp in the mountains close by. They presented many features in common, as follows:—

Onset sudden without rigor, so sudden that the exact hour of the first symptom could be given in most cases. The first symptoms were "dizziness," a general feeling of illness, and headache, at first slight but growing in severity during the succeeding two or three days; this symptom was common to all. These men were admitted on the day of onset with temperatures of between 101° and 105°, and this fever was maintained with irregular fluctuations, but rarely falling to 100°, for 6-8 days, except in one fatal case in which it fell during the fourth day to 97·6°, and on the sixth and seventh, the day of death, to 96·6°. The pulse as a rule was not commensurate with the temperature; for instance, in one case the readings are T. 103·6°, P. 100, R. 30, and similar readings might be multiplied. The rapid respiration rate is suggestive of pulmonary complication, but I found no signs in those I examined. Pains general, or in the legs or back, occurred in eight. In nearly all suffusion of the conjunctivæ was noted as an early symptom, and in half of them soreness or redness of the fauces, and three showed herpes labialis. Of this group only one developed moderate catarrhal lung symptoms. In no case was the spleen or liver enlarged.

In addition to these cases Captain Broadbridge writes that shortly after this 18 more were admitted from the same source, and these he considered to be cases of so-called "epidemic pyrexia."

Taken as a whole, these two groups, totalling 28 cases, from one camp presented a general symptomatic similarity to the type of influenza which had been rife among the troops and civil population for some months previously. But among them, and in their onset and symptoms indistinguishable from the rest, were six cases (21·4 per cent.) which developed jaundice, and as jaundice was very common at that time they seem worthy of special notice. This jaundice appeared on about the sixth or seventh day of the illness, except in the fatal case in which it occurred on the fourth. Two of these I saw on my visit, and the others developed after it, but unfortunately I was prevented by illness from following them further.

Sapper G. H. D., aged 26, suddenly became "dizzy" and chilly at 6 P.M. on July 24th. He was admitted the same evening, with T. 101°, P. 102, and R. 22, headache and pains in the calves, and suffusion of the conjunctivæ appeared the next day. The fever was maintained at between 101° and 102·6° for four days, fell to 100° on the sixth, on which day he was jaundiced without any additional symptoms except for a crop of slightly raised purpuric blotches about the left loin and abdomen. With the fall of temperature the pulse-rate became abnormally slow, 46-66. He was transferred to No. 9 C.C.S. and from there evacuated to the base. No further notes are forthcoming, but from our experience we should suspect a continuance of low-grade fever.

Driver J. H., aged 20. Sudden onset with "giddiness" at 9 A.M. on July 26th, slight sore-throat and general pains. Admitted same day with a temperature of 102·4°, rising to 103·6°, falling suddenly to 97·8° on the morning of the third day, but rising again the same day to 101·6°. On the fourth day jaundice appeared and the temperature fell from 102° to 97·6°, and finally to 96·6°. The pulse-rate was 100 when the fever was at its highest, and respirations 30 without pulmonary signs. The jaundice became very intense, the tongue thickly coated white, and he suffered from repeated vomiting, intermittent headache, and severe general illness. No physical signs referable to heart, lungs, liver, or spleen were found at any time. He died in No. 9 C.C.S. on the seventh day of his illness. The post-mortem report is as follows:—"Acute pancreatitis. All tissues and organs deeply stained. The pancreas was swollen and hæmorrhagic. Inflammatory swelling around the orifice of the bile-duct, and also adhesion at the foramen of Winslow. No free fluid in the lesser sac. Liver, spleen, kidneys, and other organs apparently healthy except for bile-staining."

Most unfortunately no microscopical or bacteriological report on these organs has come from the laboratory owing to a change of pathologists at that time, and an important link which might have thrown light on this and the other milder cases is thus lost.

We have here, then, a group of 28 cases having common characters in the early stages, as to onset and symptoms and from the same place. Some of them develop jaundice, and, judged by the course of other cases to be detailed later by E. G. P., probably ran a long course of low fever. Others, the majority, are non-icteric. The icteric forms resemble clinically the spirochætal type. Have the non-icteric cases the same infective origin? Or are all influenzal, as one at first thought, with catarrhal jaundice as a complication. If so, why should such a simple complication so materially change and lengthen the further course of the disease? Or, lastly, have we two epidemic diseases occurring coincidently?

I have but little information as to the later stages of this group, except inferential. One icteric case returned to duty in 18 days, an unusually short course. One died as reported above. Four were evacuated to the base or to France, and of these 1 only came under our observation subsequently. Of the non-icteric cases, 3 were evacuated to the base; of 12 there is no information. The remaining 7 were returned to duty from the local schools hospital or the C.C.S. after varying periods of stay in hospital—namely, 2 for three days only, 2 for 17 days, 3 for 18, 21, and 42 days respectively—an average stay of 17 days. Most of these periods are long for the type of uncomplicating influenza then prevalent.

The special interest to us in this group lies in the first-hand information at the earliest of a type of jaundice of which we saw a considerable number of instances in the later stages at the base, cases in which this information was very meagrely recorded on the field medical card.

In order to obtain some collective information on points such as are discussed in the following analysis, Colonel Howell, A.D.M.S., L. of C., caused reports on all cases of jaundice to be returned by medical officers of all units on L. of C. and base area during the months of September, October, and November, which also include a few in July, August, and December. As might be expected, these returns are very variable in value, but an analysis of them brings out some information after all reservation has been made. 128 returns of cases of jaundice came to hand, of these 17 were rejected, leaving 111 for consideration.

Analysis of Returns.

Seasonal incidence.—The greater number of cases occurred in the months of September and October, 58 and 38, respectively, 96 in all. In August 16, in July 3, in November 5, and in December 3, totalling 123 returns in which a date was given.

Regional incidence.—The greater number of returns are of cases occurring in the forward area—i.e., in the front line 12, or just behind it 16, the remainder being between this and Vicenza 21, and south of Vicenza 23, 2 from Padua. Thirteen came from places which cannot be identified on the map but were certainly in one of these regions, so that 92 came from the forward area (90 per cent.). Ten only came as isolated cases from places on the L. of C.

"Catarrhal" cases, 84 returns.—These are cases which are stated to have had no fever at any time, but included among them are three which had a very slight short rise above normal. The symptoms at onset in 41 are abdominal, pain in the epigastrium and indisposition, nausea 7, general malaise 5, diarrhœa 2 only, headache and vomiting 13, vomiting 4, 72 in all.

Onset of *jaundice* from the first day of illness. Fifty-eight returns are available for this point. Fifty cases developed jaundice on various days from the first to the eighth, and of these 37 up to the fourth day, in 16 jaundice was practically the first symptom. Of these 58 cases the average day of onset was the fourth.

Where a record of the first appearance of *bile in the urine* is made this symptom, as might be expected, precedes the disappearance of the skin colouration by two or three days.

Date of reappearance of bile in the stools. This was noted in only 29 cases, and it is a very variable one, from the third to the twenty-first day. The average day is the twelfth, and that is probably an outside time.

Date of disappearance of icteric tinge from skin and conjunctivæ. This is a small point, but as a return was made

in 31 the figures may be mentioned. The largest number, 20, fell between the eighteenth and twenty-seventh days. The shortest period was 8 days from the onset of jaundice, the longest 31 days, the average being 21.

Albuminuria was recorded in 25 cases and absent in 42 in the 67 cases in which an examination was made. 44 returns are silent on this point. Spirochætes negative, microscopically by inoculation in 2.

These returns of catarrhal jaundice are given for what they are worth. They came from all parts of the war area, but mainly from the more active forward area. They present elusive clinical features contrasting in this respect with the pyrexial group now to be analysed.

Analysis of Pyrexial Group.

Jaundice with a definite pyrexial onset.—A comparatively small but important group of 27 cases (24 per cent. of the whole number), it includes the cases referred to in E. G. P.'s note (*infra*), but not those of H. H. T.'s group in the first part of this article. The onset is noted as sudden in at least 14 of them, probably in all. In 17 the temperature is recorded as from 99° to 104°, and in those in which it was not recorded on the field medical card the symptoms were such that a high temperature was practically certain. Among the symptoms at onset were returned: abdominal pain, mostly epigastric, general pains, headache, epistaxis, sore-throat, vomiting, diarrhœa only in two.

Initial fall in temperature. This was noted in 17 cases, in 11 of which the fall took place on the fourth to the ninth day, the shortest period being the fourth, the longest the fourteenth day from the onset of the illness, giving as an average day the eighth. The fall of temperature, which generally marks the onset of the jaundice is followed by a short apyrexial period. This is returned in 14 cases, in 9 of which it lasted for from 2 to 6 days, the average period from these figures is 5·7 days, which is probably an outside estimation. The apyrexial interval is followed by a variable, but generally prolonged, period of irregular low grade fever, as described below by E. G. P., 19 returns give information on this point, but in some the temperature had not become normal at the time of the return, so that the average made is probably somewhat within the truth. The shortest period of secondary fever is given as 8 days and the longest is 57, the average being 33 days.

Onset of jaundice.—This was noted in all the 27 returns. In 20 of them the day of onset was from the third to the eighth, 10 being the third or fourth. The appearance of jaundice tends to precede that of the initial fall in the temperature, but that particular point is made in fewer cases. The average day of onset is the sixth (strictly 5·9). In the catarrhal group this day would appear to be earlier—i.e., fourth, average.

Reappearance of bile in the fæces dated from the onset of jaundice. As this is an indication of the duration of obstruction it is a fact of some importance, and a return was made in 19 cases, but unfortunately in about half of these the early note is defective, and it is only stated that at the time of admission to the unit in the base area the stools contained bile. The obstruction period is therefore certainly less than the figures at our command would warrant. It is disappointing that an observation so simple, and yet so interesting, should have been made in so few cases. With this reservation, in 15 the fæces were said to be bile-coloured in from 6 to 12 days after the appearance of the jaundice. An average of 8 days of obstruction for the 19 cases is probably too long, and 6 days is likely to be nearer the truth.

Disappearance of bile from the urine, noted in 16 returns to occur at all periods from the eighth to the forty-sixth day, gives an average day as the twenty-first.

Disappearance of icteric tinge in skin and conjunctivæ, mentioned in 21 returns, was complete in the average by the thirty-fifth day.

Albuminuria.—A note on the urine is made in 25 returns, information having been required as to the presence of albumin, casts, and spirochætes. Albumin is definitely stated to be present in 12 cases, and casts in 5 of them. The remainder were returned as negative. As to spirochætes there is no evidence that they were specially searched for except in E. G. P.'s returns, and he records a negative result in all the cases examined microscopically—i.e., 12, in 4 of which also inoculation of guinea-pigs was performed without effect.

Note by E. G. P.

This note is based upon 29 cases of jaundice under observation at a stationary hospital at the base during the months of August, September, and October, 1918. The cases were drawn from the front line, intermediate, and base areas.

They fell naturally into two divisions: 1. The catarrhal type, in which fever was entirely absent or very slight—that is, not over 100° F.—during the first few days of illness. Of these, there were 17, and in two cases only a record of any fever. 2. The pyrexial type, which again divided itself into two classes: (*a*) initial fever followed by a long-continued low grade of fever, in all seven cases; (*b*) initial fever, followed by a secondary rise of limited duration, five cases.

All the 29 cases fell within these divisions, and so far as is known there was no case which presented a high grade of initial fever which was not followed by the long-continued low grade of fever or by fever of a relapsing type. Of the 29 cases only two originated at the base itself, and these were of true catarrhal type. The others originated either in the front line itself or in the advanced lines of communication. Except for the two catarrhal cases mentioned above these cases did not arrive at the base until ten days or more had elapsed from the commencement of the illness, and therefore one had to depend upon the information to be obtained from the field cards or from the patients themselves, guided by the records on the field cards.

Although the pyrexial type is that which presents the most interesting features, it will be useful to give a description of the catarrhal cases, as it will serve as a useful contrast to the pyrexial cases, and will also be a record of catarrhal cases occurring in Northern Italy.

The *catarrhal cases*, then, were as a rule distinguished by a gradual onset, by absence of or only slight fever at the onset, by the tendency to early onset of jaundice, by the presence of clay-coloured stools, by the symptoms being mostly referable to the intestinal tract rather than generalised, by the rapid onset of convalescence after the disappearance of the jaundice, and by the absence of tachycardia as a sequela. The cases varied in severity from a very slight illness to one of a moderate grade of intensity. General symptoms, such as headache, dizziness, giddiness, pains in the back and limbs, cough, may be present, but they do not form the prominent features of the illness. These were referable to the intestinal tract and abdomen, and in addition to the jaundice consisted of loss of appetite, furring of the tongue, thirst, abdominal pains, nausea or vomiting, constipation or diarrhœa. Some abdominal pain was always present, but it varied very much in severity from the ordinary epigastric pain of indigestion and irregular griping abdominal pains without abdominal tenderness to constant severe pain with distension and a general abdominal tenderness, but this latter was unusual. The position of the pain or tenderness in these cases is of importance, as only five of them referred it to the region of the gall-bladder or right costal margin, the others referring it to either the epigastrium or generally to the abdomen. In addition to the symptoms mentioned above, others occasionally noted were insomnia, general weakness, pains in the chest, drowsiness. One patient had a fine petechial rash on the chest and abdomen on the tenth day of illness, and one said that at the beginning of the illness there were streaks of blood in the vomit. None complained of itching of the skin and none had epistaxis or herpes.

The jaundice was characterised by a tendency to appear early in the course of the case. In the two cases which were local admissions the jaundice was present in both on the first day, but taking the whole 17 cases, in 11 the jaundice appeared during the first five days of the illness. The early onset of the jaundice was accompanied by a correspondingly early appearance of bile in the urine and disappearance of bile from the stools, these events generally showing themselves on the same day or the day after the appearance of the jaundice. The bile reappeared in the stools in two-thirds of the cases within two weeks, and in all within three weeks, of the onset of the illness. But disappearance of the bile from the urine was of later date, in two-thirds within three weeks and in all within four weeks.

The skin was normal in all but one within a month and was either coincident with, or followed in a few days, the disappearance of bile from the urine, but the conjunctivæ showed a tendency to remain coloured for a distinctly longer time than the skin, but only in one case for over a week.

In all the cases when bile was present in the urine albumin was also present, and in all when the bile disappeared the albumin also disappeared. In 2 cases casts were present in the urine; in one they were hyaline in character, in the other granular.

The spleen was enlarged to percussion in 9 cases, and in two of these instances was palpable. The liver was enlarged to percussion in 6 cases, but was never palpable.

The position of the apex beat of the heart was noted in every case, as it is of importance with relation to enlargement of the liver, and in 5 of the cases where the liver was enlarged to percussion the apex beat was found in the fourth left interspace. The pulse-rate in 13 of the 17 cases was abnormally slow. Two cases showed reduplication of the heart sounds.

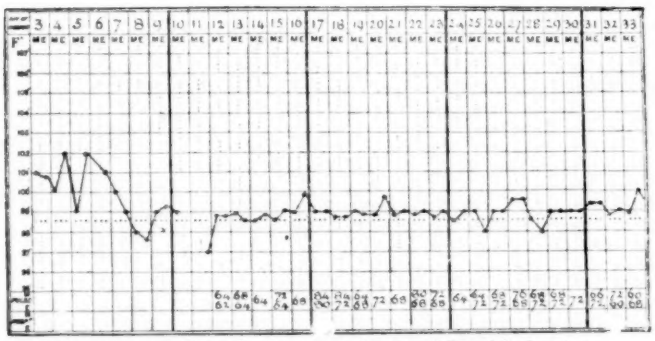

CHART 1.—Pyrexial Type 1. Gnr. P. Initial fever followed by long-continued low grade fever. This chart was continued to the 60th day, with irregular daily variations of temperature from normal to 99·8°.

The examination of the stools showed in 3 cases out of the 17 the presence of the ova of *Trichocephalus dispar*, but as these ova were very commonly found in Italy in the stools of patients of all sorts, surgical and medical, it cannot be said that they should be regarded as a cause of the jaundice when present in this proportion.

One of the cases was a convalescent dysentery, and in another the jaundice appeared while the patient was in hospital suffering from a boil of the thigh.

All cases except one were convalescent within one month of the onset of the disease.

The *pyrexial cases* now claim our consideration, and they fall into two classes according to the type of fever. Those with: (1) an initial fever of about seven to ten days with an interval of five to seven days, in which the temperature remains about the normal, followed by a long-continued low grade of fever which lasts from about 30 to 60 days. (Chart 1.) (2) An initial fever of about seven to ten days with an interval of five to seven days, in which the temperature remains about the normal, followed by a secondary rise of about seven days' duration, and that again sometimes followed by a short tertiary rise, after which the temperature tends to settle to the normal in distinctly less time on the average than in the first class of case. (Chart 2.)

Of the 12 pyrexial cases, there were seven in the first class and five in the second class, and apart from the type of fever and perhaps a marked lemon tinge of the skin in the first class there was very little, if any, difference in the symptoms in the two classes, although in the second class there was not the same uniformity of severity as in the first.

The seven cases with a continued fever were all acute in onset, and the attack severe and prolonged. The symptoms were those which mark the onset of an acute pyrexial attack—viz., shivering and chill, high fever, sudden malaise, aching of the head, body, and limbs, thirst, marked weakness, sore-throat or injection of fauces, giddiness and dizziness, photophobia, suffusion of eyes, stiffness of neck muscles, accompanied by or followed in the course of a day or two by abdominal symptoms, pains in the stomach, vomiting, constipation or diarrhœa, jaundice appearing between the fourth and seventh days, commonly on the sixth day of the illness. With the onset of jaundice there was a rapid decline of the fever, but although the patient generally felt better there was usually some drowsiness, apathy, very foul tongue, and bad appetite, perhaps epistaxis or a petechial rash. The jaundice rapidly became very marked and very gradually died away, but bile was absent from the urine in all the cases at least three weeks before the fever entirely died away. With the disappearance of the jaundice the skin assumed the lemon tint, and anæmia was marked in all. The lemon tint made it extremely difficult to say when the jaundice had really disappeared, as the two merged into one another. By the end of the second week the continued fever had generally started on its long and tedious course, during which it often stayed monotonously about 99° for some weeks. With regard to the abdominal conditions, the local symptoms did not compare in intensity with the more general ones, but the abdomen was usually tender, sometimes swollen, and the tenderness and pain showed a marked preference for the region of the gall-bladder and the right lower costal margin rather than the epigastrium. The condition of the bowels was at the onset of the illness either one of constipation or of diarrhœa, generally the former. One patient had herpes which developed on the sixth day with the jaundice, and one had swelling of the glands of the neck accompanying his sore-throat. Two had sore-throat which was of a severe character, but in neither was it the initial symptom. All the cases were extremely tedious in their convalescence, the fever not abating in the least severe until six weeks had elapsed from the beginning of the illness, and one had fever lasting ten weeks. After the fifth week there was a marked tendency to tachycardia.

There were five cases with the second type of pyrexia. Two of these presented the same sudden onset and symptoms as the first group. A short synopsis of their symptoms is appended. These two men belonged to the same battalion and were both stationed at Arzignano. The one was taken ill a day previous to the other. They were not companions, nor was there any apparent connexion between them in their duties. Their temperature charts show a remarkable similarity; the clinical picture of their cases was also similar.

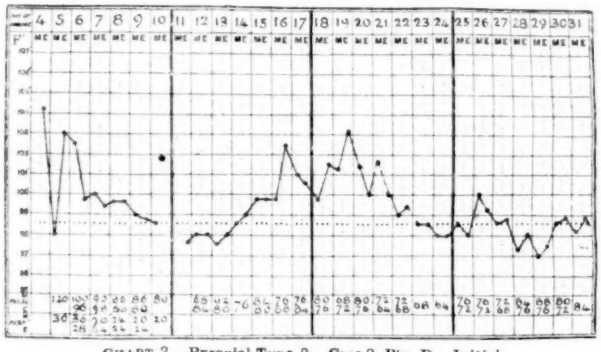

CHART 2.—Pyrexial Type 2. Case 2. Pte. D. Initial fever followed by secondary rise of limited duration.

CASE 1.—Pte. L. Date of onset, 31.7.18. Onset very sudden, with sickness, diarrhœa, pains all over the body, headache and fever, pains in the stomach, and cough. 2.8.18: Jaundice and herpes. 5.8.18: Jaundice very marked, cough, headache, pains in the stomach. 11.8.18: Tongue very dirty, liver enlarged and tender, but not palpable. 14.8.18: Pain in the splenic region, with a fine friction over the spleen. No evidence of splenic enlargement. 26.9.18: Alveolar abscess. 29.9.18: Pleural friction at the right base, back and front, of a coarse character.

CASE 2.—Pte. D. Date of onset, 1.8.18. Onset very sudden, with pains in the head, fever, and shivering. 2.8.18: Slight epistaxis. 3.8.18: Hæmoptysis and great weakness. 4.8.18: Temperature 104·2°; jaundice. 5.8.18: Jaundice marked and pains in the stomach. 6.8.18: Herpes of lips and left cheek. 11.8.18: Deep jaundice, erythematous and urticarial

rash of forearms, chest, and abdomen. Lower liver edge tender but not palpable. Spleen not enlarged. 13.8.18: Some small petechiæ in rash. 15.8.18: Rash almost disappeared. 16.8.18: Temperature 102·4°; apathetic. 19.8.18: Temperature 103·2°; vomiting and severe pains in the back; liver and spleen not enlarged. 23.8.18: Fever gone and patient rapidly improving in general condition.

Both showed a tendency to tachycardia after the fifth week.

The other three cases included in this group did not show the same severity of symptoms, and their fever was neither so high nor so prolonged, but they all had an initial fever followed by a secondary fever of limited duration.

The question then arises, Do these two groups of pyrexial cases own the same cause? As their symptoms are so much alike and their only difference appears to be the type of fever, it seems that this question must be answered in the affirmative.

Taking, then, these pyrexial cases as one group, in the 12 cases observed, the earliest appearance of jaundice was on the third day, in 2 the jaundice appeared on the fourth, and in the remainder between the fifth and tenth days, the commonest day being the sixth. Bile appeared in the urine shortly after the onset of the jaundice, but with regard to the stools there was nothing like the same constancy of disappearance of the bile from the stools, as in the catarrhal cases. Sometimes the stools were clay-coloured, but very often some amount of bile persisted in the stools throughout the illness. Bile was present in the urine in most instances up to the fourth or fifth week. Another feature with regard to the severe types was that the jaundice improved in spite of the persistence of the fever, and in most instances the temperature was still febrile after the bile had entirely disappeared from the urine.

The skin and conjunctivæ were not generally normal until the fifth to the eighth week, and the skin and conjunctivæ both seemed to approach to the normal at the same time, but owing to the lemon-tinted skin in the majority of cases it was difficult to say when the bile exactly disappeared from the skin. Casts were found in the urine in 5 cases out of the 12. In 1 hyaline, in 2 granular, and in the other 2 hyaline, granular, and epithelial. Epithelial casts were not found in the catarrhal forms. Albumin was present in the urine in all cases when bile was present. The spleen was enlarged to percussion in 5 cases, and in one of these it was palpable, this proportion not differing greatly from that found in the catarrhal cases. The liver was enlarged to percussion in 9 cases, in one of which it was palpable, the proportion here being much greater than in the catarrhal forms. The position of the apex beat of the heart was in the fourth space in 6 out of the 8 cases in which it was noted, and the liver was not enlarged in the 2 cases where it was in the normal position. The maximum point of pain or tenderness in the abdomen was in the position of the gall-bladder or under the right costal margin in 6 cases out of 11, in the epigastrium in 3, in the splenic region in 1, and in the left side of the abdomen in 1. This tendency for the pain to be situated in the right hypochondrium is doubtless in correlation with the greater proportion of cases of hepatic enlargement in these cases as compared with the catarrhal ones. The pulse-rate at the commencement of the illness seemed to vary, in some cases being slow in comparison with the temperature, in others commensurate with the fever, but with the onset of the jaundice it became abnormally slow in comparison with the fever, the lowest pulse-rate noted being 32.

The examination of the stools of these 12 cases disclosed the presence of the ova of parasitic worms in 6 of the 12, the ova of *Trichocephalus dispar* only in 3, the ova of *Ascaris lumbricoides* only in 1, the ova of *Trichocephalus dispar* and ascaris in 1, and the ova of *Trichocephalus dispar* and an adult ascaris in 1. As has been observed previously, these ova were quite commonly found amongst the troops in Italy, but the proportion found in these cases seemed to be above the average.

A blood count taken from Pte. D. on the seventeenth day of the disease during the secondary rise of temperature showed 4,096,000 red cells and 7000 white cells with nothing distinctive in the differential count. Blood pressure estimations showed nothing abnormal.

Five of the pyrexial cases were examined as to the presence of the enteric group of organisms in urine and fæces, three of the first group and two of the second. In all of these enteric group organisms were absent.

Blood cultures were taken from Pte. D. and Pte. L., the first being negative and the second showing a growth of *Staphylococcus aureus*, probably a contamination.

Investigations were undertaken as to the presence of the *Spirochæta icterohæmorrhagiæ*. In four of the cases, two of each group of the pyrexial types, a guinea-pig was inoculated but without result. All cases, both pyrexial and catarrhal, had a microscopical examination made of the urine, but the spirochæte was never found. Nevertheless, in spite of these negative results as to the presence of the spirochæte, it is felt that this may be a possible cause of the pyrexial cases, as they agree in their clinical character with the disease so well described by Dawson, Hume, and Bedson in their paper on spirochætal jaundice, although they do not specifically describe cases with low continued fever. There were no deaths among these 29 cases.

Conclusion.—During the months of August, September, and October, 1918, there were prevalent amongst British troops in Northern Italy two types of jaundice—namely, catarrhal and pyrexial. The pyrexial cases again were subdivided into two groups, those with initial fever followed by a long low continued fever, and those with initial fever followed by a secondary fever of limited duration. These pyrexial cases apart from the temperature presented the same clinical features and showed a great resemblance to cases of spirochætal jaundice, but there was no bacteriological evidence to support this view.

I must add my indebtedness to Lieutenant-Colonel C. Bramhall, R.A.M.C., for allowing these cases to be under my care, and to Major W. Broadbent, R.A.M.C., for his suggestions and interest in these cases.

Concluding Remarks.

We regret that by the force of circumstances the clinical facts in this communication are not supported by more bacteriological evidence. The bacteriological examinations were made by Captain W. Broughton-Alcock and Captain A. N. Smith, to whom we are much indebted, and whose technique is beyond question. The inoculations on guinea-pigs were made on the sixteenth, seventeenth, eighteenth, and twenty-seventh days of the disease, respectively, and therefore within the recognised limit of 28 days, but were all negative as to spirochætal infection.

We are forced, therefore, to suspect that there may be some infection other than spirochætal, though clinically similar to it, and that, if so, all these cases, with or without jaundice, may have this infection as a common causal factor. Nevertheless, we do not feel able to exclude dogmatically the spirochætal factor, in spite of negative bacteriological results, in the face of the clinical resemblance of our cases to those published by the Japanese and British observers.

Although jaundice may occur as a complication of influenza, it is certainly not common in most civil epidemics, yet it is striking that in our first group these icteric cases should be so intimately associated in origin with, and so similar in their early symptomatology to, what seem to be "epidemic pyrexial" cases, and this circumstance gives an added interest to epidemic fever or influenza which raged in Italy from the early months and onwards of 1918.

We conclude with offering our thanks to the A.D.M.S., L. of C., Colonel Howell, for coöperation in obtaining returns, and the medical officers of all units for furnishing them.

LIVINGSTONE COLLEGE.—Dr. T. Jays, who has worked in different capacities with the Church Missionary Society and the Student Christian Movement, has become vice-principal at Livingstone College, and with his wife will reside in the College. In addition to helping the principal, Dr. Jays will take the lectures previously delivered by Colonel G. B. Price, who is now working with the Ministry of Pensions. Before the College reopens on Oct. 1st a short course of 15 lectures on Personal Care of Health in the Tropics will be given from Sept. 22nd–25th by the principal, vice-principal, and probably Colonel Price. These lectures are open to men and women, and are intended for those who expect to reside or travel in the tropics. They would be of use to missionaries, nurses, explorers, members of the services, Government officials, commercial men, &c. Application for terms and conditions of attendance should be made previous to the lectures to the Principal, Livingstone College, Leyton, E. 10, who will be pleased to answer any questions with reference to these lectures or concerning the full nine months' course at Livingstone College, which will commence on Wednesday, Oct. 1st, 1919.

THE EFFECTS OF ARTIFICIAL PNEUMOTHORAX.

BY S. VERE PEARSON, M.D. CANTAB., M.R.C.P. LOND.,
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THIS article is based upon the experience gained from 21 patients with severe pulmonary tuberculosis whose pneumothorax I induced artificially, except in one case (No. 19), between August, 1910, and December, 1916. The exception had developed a spontaneous hydro-pneumothorax which I converted into a controlled pneumothorax.

Striking Results of Artificial Pneumothorax.

This series includes all those so treated by me during this period in whom the pneumothorax obtained was complete or nearly complete. Eleven of the 21 are alive, and all save two of these are enjoying good health and following their usual vocation.

No.	Sex and age.	Date of induction of pneumothorax.	Side.	Whether fluid present.	Whether fluid tapped.	Date of last (or latest) injection of gas.	Interval between most recent refills of gas.	Amount of gas taken at most recent refills.	Present state.
								c.cm.	
1	M., 34	15/8/10	R	+	+	Sept., 1911	4 w.	?	Died Jan., 1915.
2	M., 30	23/5/11	L	+	+	Feb., 1919	7 w.	600	Well; working.
3	M., 42	14/11/11	R	+	+	June, 1917	about 2 y.	350	Died July, 1918.
4	F., 22	20/11/11	L	+	+	Dec., 1912	2½ w.	180	Died March, 1913.
5	F., 17	1/1/12	R	–	–	Mar., 1914	6 w.	500	Died June, 1916.
6	F., 17	28/2/12	L	–	–	May, 1913	4 w.	700	Died Feb., 1915.
7	M., 24	13/1/13	L	+	–	Feb., 1915	6 w.	900	Well; working; about to marry.
8	M., 23	21/3/13	L	+	–	Feb., 1919	3½ m.	375	Well; working.
9	M., 34	7/7/13	R	+	+	May, 1917	2½ m.	400	,,
10	M., 21	2/11/13	L	–	–	Feb., 1919	5 w.	1100	,,
11	M., 38	5/11/13	R	–	–	Apr., 1914	w.	600	Died April, 1914.
12	F., 33	17/11/13	R	+	+	May, 1915	3 w.	120	Died August, 1915.
13	M., 35	3/1/14	R	–	–	Feb., 1914	10 d.	650	Died Feb., 1914.
14	M., 40	7/1/14	L	+	–	Jan., 1919	3 m.	900	Well; working.
15	F., 39	8/8/14	L	+	+	Feb., 1915	2 w.	200	Died March, 1915.
16	M., 46	8/9/14	R	+	+	May, 1918	12 m.	700	See below (*a*).
17	M., 26	2/12/14	L	–	–	Sept., 1918	2 m.	600	See below (*b*).
18	F., 21	4/6/15	R	+	–	Jan., 1919	6 w.	600	Well; working; married in 1918.
19	M., 53	28/4/16	R	+	–	Feb., 1918	1 m.	300	Died March, 1918.
20	M., 23	21/7/16	R	+	+	Feb., 1919	2 m.	500	Invalid.
21	F., 35	11/9/16	L	+	–	Dec., 1918	2½ m.	1000	Well; working.

y. years; m. months; w. weeks; d. days.
(*a*) Breathing apparatus good, but somewhat incapacitated by bone tuberculosis; (*b*) Fairly well, free from symptoms, but not capable of much work.

Nearly all of the ten who have died had their symptoms much alleviated and their lives materially prolonged, in several instances by years, during which they enjoyed fairly good health and followed their occupations. The restoration to health and activity of most of the 11 is wonderfully complete.

For example, No. 10 writes (January, 1919): "I have no trouble, enjoy good health, and I am quite unconscious of the fact that I am only using one lung. I feel a perfectly normal individual."

No. 7's doctor wrote (December, 1918): "He feels in perfect health. Can walk up hills better than his sister, who is a strong, healthy girl."

And No. 14, a doctor working regularly as a sanatorium physician for the past four years, now cycles occasionally 15 to 20 miles in a day, or does a quiet half day's shooting.

These results can justifiably be called remarkable when it is observed that they are obtained for people whose state was generally of such a nature that only a few months of serious invalidism could have been anticipated under the ordinary régime. The history of most of them is well exemplified by that of Nos. 2, 7, and 12.

No. 2 had been to two or three sanatoriums during the years before admission to Mundesley; he had bad laryngeal as well as severe pulmonary lesions.

No. 7 had been under sanatorium treatment without avail in Devonshire and Mundesley for nearly two years before the induction of the pneumothorax, and had had serious symptoms for longer than this.

No. 12 had been ill for 3½ years before compression therapy was started; she had been unable to take exercise on account of fever for 15 months; she had half a mugful of muco-purulent expectoration containing tubercle bacilli.

Every case in the series had expectoration containing tubercle bacilli. But the nature and severity of the condition of these cases can be judged by reference to my previous writings on this subject.[1] The gist of the matter is that in nearly every case a situation had been reached which was quite hopeless apart from artificial pneumothorax.

A striking contrast to these results is to be found by following up the after-history of those patients for whom artificial pneumothorax was attempted unsuccessfully because of adhesions, including under this head those in whose cases pneumothorax treatment was abandoned at an early date because of the ineffectual, partial nature of the pneumothorax produced. During the same period (August, 1910, to December, 1916) I tried to induce a pneumothorax but failed completely on account of adhesions in six cases, and I induced only an ineffective, partial pneumothorax soon abandoned in seven other cases. All save one of these patients are dead. The one still alive does not enjoy good health and is unable to follow his occupation. The average length of life of the twelve who died, from the date of the attempt to induce a pneumothorax, was probably considerably under two years (I have not all the data for arriving at this average). Whereas the average length of life of those who died in spite of the artificial pneumothorax treatment was 2¼ years, though the number includes 3 who only lived 1½, 4½, and 6 months respectively. And in the case of those with an effective pneumothorax who are still alive the average time to present date from the date of the induction of the artificial pneumothorax amounts to 4¾ years, the longest time (No. 2) being 7¾ years and the shortest (No. 21) 2½ years.

Factors affecting the Course of Treatment.

In the rest of this article I shall deal with the results and complications of artificial pneumothorax as they affect the course of the treatment. As usual, difficulties, failures, and mistakes have taught me more in the course of the last 8½ years than all the routine management of those cases which have gone forward smoothly. As usual, too, in reviewing one's experience one finds that set rules are hard to lay down. Circumstances vary widely. Each factor at any particular juncture must be taken on its merits and weighed before a step is taken. But a few useful conclusions may be enunciated none the less.

(*a*) In the earlier stages of the treatment, say up to about 18 months, I believe there is greater likelihood of making a mistake by injecting gas too seldom and taking the pressures too high rather than erring in the opposite directions.

(*b*) I am convinced that abandonment of the injections of gas in a successful case after too short a period is a far worse error than the continuance of refills for too long. I believe No. 6 might have maintained perfectly good health had the treatment not been abandoned too soon, I may add, through no fault of the patient or of mine. About 18 months after starting the pneumothorax and about three months after stopping it, having been in apparent perfect health for nearly the whole of this time, she was looking upon herself as a perfectly normal individual, and was allowed to work eight hours a day studying at a college. Relapse set in about six months later, the pneumothorax could not be re-established, and the disease spread far. In the case of No. 5, too, whose subsequent history was somewhat similar, I am much inclined to think from subsequent experience that a further year of refills—i.e., 3½ years instead of 2½—might have produced a permanently good result.

[1] E.g., to articles in The Practitioner (September, 1911) on "The Choice of the Patient for Artificial Pneumothorax," and in the British Medical Journal (Oct. 12th, 1912), where further details and a more ample history of several of the patients can be found. In the present series, Nos. 1 and 2 are Nos. 1 and 4 in the first article, and Nos. 3, 4, 5, and 6 are Nos. 3, 2, 4, and 5, respectively, in the second paper.

(*c*) It is by no means an invariable rule for the pleural surfaces to become adherent after injections have been given up. A patient not included in this series because not originally "blown up" by me consulted me five years ago. It was decided to attempt to give an injection of gas, though no refill had been given for just over two years. Rather to our surprise several hundred c.cm. of nitrogen were injected without difficulty. This patient's artificial pneumothorax was started abroad ten years ago. He has been earning his living for the last 8½ years. Again, No. 2 in this series once went about 15 months without a refill. He then met with a street accident, and a few weeks later, feeling uncomfortable, consulted me. I withdrew two and a half pints of deeply blood-stained fluid from his left chest and gave 1400 c.cm. of nitrogen. This was on April 24th, 1915. Since then he has continued to have occasional refills, because he felt better with them than during the many months of their abandoment. No. 3, too, once went two years between injections, but then he had an appreciable amount of fluid in the chest probably throughout this time. I shall make further reference to his case below.

(*d*) Every endeavour should be made to keep the pneumothorax cavity always a closed one. The only excuse for disregard of this rule seems to me to be the presence of secondary micro-organisms. In none of my cases has this happened. In passing I may mention that after careful search tubercle bacilli can be found in the purulent sediment from the fluid in many of these cases, I should think in about 75 per cent. of those with fluid. If once a tube is put into a tuberculous pyothorax cavity the chances are that a permanent sinus persists, requiring all the bother of dressings at least once a day, and bringing every likelihood of secondary infection, however much care is taken to avoid it. Case No. 1 suffered from at least one of these disabilities for several years, and they might in all probability have been avoided.

(*e*) Those cases which develop fluid at any time in the course of the treatment want watching with special care. It is amongst these patients that sequelæ requiring careful handling are particularly likely to occur. Under this head there are many important points, and they demand several paragraphs. But before dealing with them I will describe briefly some other peculiarities which are met in the later periods of the treatment, say after the second year. These can be classified under the heads of anatomical and physiological.

Anatomical Considerations.

It is surprising how small the visible deformity of the chest is in these cases. Little difference is observable on casual inspection, sometimes only very slight inclination to the "barrel-shaped" type of thorax, and to diminished movement on one side. Case No. 7 was passed for military service in August, 1914, only to have his schemes thwarted by his practitioner. But in 1915 he attested under the Derby scheme and was passed Class A.

None the less in many cases the ribs come very close together by degrees, and in most the inflated side of the thorax comes to be partly filled by much displaced mediastinal and subdiaphragmatic organs. On the left side, e.g., the heart may come to be quite 3 in. outside the nipple line and displaced upwards considerably as well, while the stomach comes quite high in the chest. My impression is that great displacements are commoner on the left side than on the right. Occasionally the mobility of the mediastinum and its contents, which varies in different individuals, is largely lost, and the heart becomes more or less anchored, displaced to the side with the compressed lung. But more frequently the displacement is altered in amount by a refill, even years after the starting of the pneumothorax. Seldom, however, does a refill really late in the course of the treatment lead to any considerable displacement of organs away from the side of the compressed lung.

Considerable thickening of the pleura, especially of the parietal pleura, occurs in a moderate number of patients by about the third year. The practised hand can usually feel and gauge this at the time when the needle is inserted for a refill, and the golden rule must be observed of never giving any gas unless the appropriate oscillations are present. My needle once got into the pericardium, and I found well-marked negative oscillations, but synchronous with the heart beat. Naturally I withdrew the needle, afterwards giving an ordinary refill. There was no untoward result.

On another occasion, on introducing the needle rather deeply to get through a thick pleura in a high position rather far back in the axilla of a patient who had been having refills for several years at three-monthly intervals, a soft sibilant squeak was audible at the very end of each inspiration referred to the chest by the patient. The pressure, as shown by the manometer, was much below zero, but the oscillations were not free. When I withdrew the needle a little the squeak stopped, the negative pressure became more pronounced, and the oscillations much greater. I concluded I had wounded the lung a trifle. An ordinary refill took place and no adverse symptom whatsoever arose.

Physiological Peculiarities.

Under the head of physiological peculiarities, belonging more especially to the late stages of the treatment, the low pressure readings are important, because before starting the refill of gas preparations for the low negative pressures must be made. These are, of course, prone to occur, especially when the intervals between refills are long—two or more months. Under such circumstances it is necessary to see that there are about 7 to 10 cm. or more for some cases of a negative pressure in the gas bottle just before starting, and to take care that the bulb at the top of the negative stem of the manometer is large enough—a state of affairs not, I fear, usually to be found in the apparatus hailing from the instrument-makers. As an illustration of such readings (when below −34 approximate only) I append the following from Case 14:—

Date of refill.	Starting pressures.	Amount of gas given.	Ending pressures.
25 8 17	−32 −12	800	− 8 −2
29 11 17	−44 −20	925	−13 −6
22 2 18	−42 −22	800	−13 −6
27 4 18	−40 −16	930	− 9 −5

Another fairly common physiological peculiarity worth mentioning, a fortunate one, but one which needs vigilance and guardianship, is the restoration to health of a person accustomed to severe illness, possibly for years. He may on this account be disinclined to continue the refills of gas for a reasonable time; and he may get careless about his health. Such carelessness, in accordance with all the general principles applicable to such a class of case, simply courts relapse, disaster, and death. In this connexion, too, those who absorb the gas comparatively quickly should be especially cautious to refer regularly, at not too long intervals, to their doctors, lest undesired premature re-expansion of the lung accompanied by adherence of its surface set in through leading too strenuous a life. At the other extreme amongst the restored is to be found occasionally one who is over-reluctant to abandon the refills, or to reduce their frequency to a sufficient moderation. But, as I have already indicated, this is an error on the safe side.

The Presence of Fluid.

Now with regard to cases in which fluid arises, and it must be borne in mind that this includes about 70 per cent. of all cases, the course of the treatment is nearly always rather more complicated than when there is no fluid. Not invariably though, because sometimes effusion occurs and then dries up again spontaneously without disturbing events materially. Even in such circumstances, however, there is commonly some interference with the spacing of the injections of gas. But this subject has been fairly adequately dealt with in the previous literature on artificial pneumothorax, so I will pass on to further points. In reference to the incidence of fluid in these cases (see above table) two points must be observed, viz: The + sign indicates the presence of fluid in the course of the treatment, extending over years in many cases, even when the amount of the fluid has been small, and its interference with the health and comfort of the patient inappreciable. Secondly, the + sign in the next column may mean only one aspiration or several.

Occasionally it may happen that it is a little difficult to distinguish between fluid in the stomach and in the chest, more particularly on the left side, of course. It must be remembered that the stomach gets into a high position, and that some patients are apt to anticipate a pleural splash. I

have had three or four doctors amongst these patients, and one of these even raised the question, quite justifiably, as to whether a curious little flapping splash was not due to pericardial fluid. The occurrence of this splash only bothered the patient in one position and it synchronised with the heart beat. But we were able by careful examination, though not quite easily, to localise the fluid to a displaced and slightly dilated stomach. When fluid was present in this organ and a certain position was taken up the heart jogged it and a slight splash reverberated through there being a sounding-box, so to speak, just above it in the shape of a small, old-established pneumothorax cavity. It is usually quite easy to localise the fluid by means of percussion, x ray examination, to a small extent by the sensations of the patient, and especially by noticing the peculiarly metallic, ringing nature of the splash when the fluid is within the chest as compared with its duller resonance to the ear, applied by stethoscope or held close to the patient when shaken, if the fluid is only a stomach splash.

Cases Illustrating Points in Relation to Presence of Fluid.

A partial account of events in the cases of two patients (Nos. 3 and 12) will best serve to bring out certain other difficulties and pitfalls connected with the presence of fluid during the late stages of the treatment.

First, a few facts regarding fluid withdrawals in Case No. 3. But these do not include all such facts about him, as during the course of his 7¾ years of life after the first "blowing up" he consulted many physicians at home and abroad, and on one or two occasions other than those noted here I believe he had fluid withdrawn and replaced by gas.

Date.	Pressures.		Fluid withdrawn.	Gas given.	Ending pressures.
	At starting.	During operation.			
			c.cm.	c.cm.	
27/3/12	+ 3 + 6	...	400	...	...
3/4/12	...	...	2420	2600	+18 +23
18/5/12	+10 +15	...	475	800	+ 6 +12
12/9/12	...	−16 −20	3650	1200	− 4 + 1
4/12/12	0 + 6	...	...	125	+ 8 +13
5/12/12	...	−30 −22*	...	...	...
8/12/12	...	...	2150	1900	+ 8 +16
3/5/17	...	−12†	550	350	+ 8 +12
6/6/17	+ 8 +12	...	...	100	+19 +25
8/6/17	...	...	550‡	...	...

* After ½ pint of fluid had been withdrawn.
† After 550 c.cm. of fluid had been withdrawn.
‡ After much pus had been coughed up.

I should mention incidentally that this patient did not lead a very invalid life most of the 7¾ years. He held a prominent place both in public life and in the business world. Though in 1912 he returned for a time to his public duties he wisely gave these up after a few months. He maintained the supervision of his big business and of his private concerns fairly intimately until about 14 months before his death, though taking a few months' holiday every now and then, and generally spending such periods in a sanatorium in England or abroad. I believe his death was accelerated by the complications which arose in connexion with the fluid in the right chest. During 1915 and 1916, when on the continent, he consulted one or two prominent foreign specialists—i.e., Professor Saugmann—at whose sanatorium he stayed for a short time, and Dr. L. Spengler. They advised leaving the fluid alone as it appeared to have become limited, stationary in amount, and turbid in consistence. When I saw the patient again after a long interval at the end of December, 1916, I concurred in this view, though finding considerable dullness, &c. I ascribed some of the dullness to thickened pleura. The patient stopped rather over two months in the Mundesley Sanatorium at this juncture, and left in a fairly good state. About two months later he became feverish and ill, and on readmission on May 25th, 1917, his state was unsatisfactory. The upper half of the right lung presented signs at first taken by myself and colleague for massive consolidation. Over the front of the fifth rib anteriorly was a swelling mistaken at first for a cold abscess connected with tuberculous disease of the rib. Subsequently the true state of affairs, a pyothorax pointing anteriorly, was diagnosed, but not until early June. The withdrawal of 550 c.cm. of fluid on May 31st had been deceptive. Dr. M. F. Squire, my assistant, and I thought we had got most of the semi-purulent fluid out; but we had not, evidently being baulked by its flakiness, though we did use a fairly large aspirating needle. Again, we probably made a mistake in raising the pressures to a maximum of + 25 cm. of water on June 6th. Unfortunately, our plans for a further and, if possible, a complete aspiration of fluid, were anticipated by an hour by the bursting of the pyothorax internally through the lung. The withdrawal after this of what fluid we could get out by aspiration, in the hope of the hole in the lung healing, was of no avail. Later, on account of the weakening effects of distressing cough and copious purulent expectoration, it seemed best to introduce a tube. This was accordingly done on August 7th, 1917, by Mr. Lawrie McGavin under copious injection of a local anæsthetic. The general condition of the patient, and the, by this time, moderate tuberculous infiltration of the left lung, put a general anæsthetic out of court. The operation was well stood and did much good, and the patient was able to get about a little for a good many months.

The history of Case 12 is very similar to the case just described. She first developed fluid one year after the initial injection (given Nov. 17th, 1913). It was first tapped six months later—namely, on June 5th, 1914. After about three tappings during the next nine months it had become turbid and seemed to show no great inclination to reaccumulate. The ribs got very close together. Restoration of health, though gratifying for a time, never became complete, and about May, 1915, the disease in the sounder left lung had advanced a good deal. Difficulties arose in maintaining the pneumothorax and in regard to the fluid. These difficulties were due to incomplete collapse and re-expansion of the lung with formation of adhesions at the top of the chest posteriorly, to the turbidity of the fluid and the purulent flakes in it, and to the great proximity of the ribs in the only region where it was convenient and suitable to try to inject gas. These difficulties, combined with the other circumstances of the case at this juncture, decided Dr. C. Lillingston, under whose care the patient then was, in consultation with myself, to abandon further attempts at injecting gas or withdrawing fluid. This decision was arrived at on June 1st, 1915. Three months later the patient had a sudden severe fit of coughing and every indication that the fluid in the pleural cavity had burst through into the lung. She died a few days later. In the middle of the previous April I had made the following note in the form of a question:—

"How far is each of the following factors responsible for the present unsatisfactory condition: (1) Activity of disease in the sounder lung; (2) activity of disease in uncompressed part of the right lung; and (3) pleurisy and fluid on compressed side?" I have no doubt now that I underestimated the third factor, and that had we made a bold and successful effort to withdraw fluid again and replace by gas the condition of the patient would have been bettered and in all probability her life prolonged.

Further Points in Regard to Fluid.

Besides the lessons already indicated in the course of describing the events which occurred to these two patients one or two further morals can be drawn from experience with these and other patients. Fluid generally, especially in the early stages of the treatment, tends to keep intrapleural pressures up. It is more likely to be followed by thickened pleura and adhesions, possibly sudden ones, than when there is no fluid. Hence, it is customary to keep pressures rather higher in such cases than in those not developing fluid, particularly because a moderate degree of pressure is thought to keep fluid from accumulating too readily. It is a good rule not to interfere with fluid unless obliged to through the chest becoming very full or for some similar reason. But both these rules can be followed too closely in the late stages of the treatment. In such stages—e.g., during the fourth year after the initial induction—in cases of fluid where an effective pneumothorax has been produced, it is as well sometimes not to be too readily deterred from continuing the treatment by such difficulties as fluid getting into the gas needle or pus flakes into the fluid needle. The remedy for each of these troubles is obvious—namely, withdrawal of fluid and reduction of

pleural pressures thereby before attempting to give a refill of gas in the one case, and the use of a larger bored needle or trocar and cannula for aspiration in the other. In connexion, however, with the latter means of overcoming difficulty in withdrawal of fluid, the possibility of leaving a sinus must be mentioned: to be avoided by preventing too big an accumulation of fluid and too high a pressure, and by appropriate manipulation of the skin and of the insertion and extraction of the instrument. Local anæsthesia is helpful and generally advisable for fluid aspiration. With its aid chest punctures need not be too charily undertaken.

One further point in connexion with fluid is illustrated by reference to Case 14, some of whose pressure readings at refills in the fourth year of treatment are given above as an example of low pressures. In this case no fluid arose until April, 1917—i.e., 39 months from the commencement of treatment—by which time the intervals between refills extended to seven weeks, and minimum pressures of −18 and −24 were found just before beginning an injection. At no time since then has fluid had to be withdrawn, nor has it become in any way more than a trifling nuisance. It seems obvious that in this case fluid has arisen in response to nature's abhorrence of a vacuum. Since the lung in his case, as sometimes happens, shows little inclination to re-expand, the obvious course of treatment is to give an occasional dose of gas to meet nature's demands in a more comfortable, controllable, safe, and convenient manner than is done by the effusion of fluid.

Indications for Cessation of Treatment: Spacing of Doses.

This leads me to one or two final matters for consideration, the most important of which is: What are the indications for stopping the treatment? If I myself had to have resort to an artificial pneumothorax I should like to have it kept up for at least three years, provided it was an effective one and this were possible. And under the three following circumstances I advise continuing with an occasional injection for at least 4½ years—namely (1) if the patient is over 33 years and has lost the resilience and recuperative powers of youth; (2) if the compressed lung was a fairly useless one before the initial injection, and if, in addition, it was producing chronic poisoning; and (3) if things are going well during the maintenance of the compression.

Compression may have to be maintained indefinitely—e.g., in Cases 2, 8, 10, and 14—either because the patient's state is more comfortable and he feels surer of himself with periodic refills, or because the compressed lung does not re-expand. On the other hand, compression with an effective pneumothorax may have to be abandoned prematurely because of activity of disease in the sounder lung or because of re-expansion of the compressed lung and adhesions. But in the first case most probably this is due to an error in the choice of the patient for this method of treatment, and in the second case most probably carelessness in not watching the patient and giving refills sufficiently often is the cause of re-expansion and adhesions.

Occasionally the treatment has to be abandoned after a long time, because a day comes when it is found very difficult, or even impossible, to continue it. In giving details above about Case 12 I have indicated the sort of combination of circumstance which may lead to this, though admitting that in this particular case we were too easily deterred from persevering by the difficulties encountered. But more usually, if the pneumothorax cavity cannot be found, it is in the case of a patient in good health who has been having treatment for four or five years; under such circumstances it does not matter much. It is better, however, to choose the time of leaving off injections voluntarily by persuading the patient not to let too long elapse before he sees his doctor about his condition and about a possible refill.

No hard-and-fast rules can be laid down respecting the spacing of doses in the late stages of the treatment, nor respecting the pressures. Compare, for example, Case 10 with Case 8. No. 10, whose present satisfactory condition I have already referred to, does not like to let his pressures go below a mininum of −14 or thereabouts, nor to prolong the interval appreciably beyond five weeks. Whereas No. 8, starting a pneumothorax only about seven months earlier—namely, in March, 1913—is quite happy to allow four months between refills; his pressures do not fall much below No. 10's, however, and probably this slower absorption accounts for the difference between them. Both lead quite active and more or less normal lives.

Causes of Death.

One or two more notes giving a few further details of interest regarding the patients of this series seem desirable. Most of those who died succumbed to the advance of the pulmonary tuberculosis. In Case 11 death took place six hours after a refill, and may possibly afford an exception to the rule holding good throughout this series, comprising many hundreds of injections—namely, that no unfortunate effect ever arises from injecting gas into the thorax when the necessary simple precautions are taken. This patient felt perfectly all right for two hours after his refill. He dressed and came down to dinner, when he was seized with sudden dyspnœa. This was not relieved by letting gas out again, a procedure which revealed the fact that no hole in the compressed lung had developed. Suspicions fell on a spontaneous pneumothorax on the opposite side of the chest, the occurrence of which accident accounted for death in Case 19. Unfortunately, no necropsy was possible. In Case 13 the condition was of South African mining origin, and this probably augmented its hopelessness. No. 15 died of tuberculous meningitis. No. 9 nearly died some months after the induction of the artificial pneumothorax, but eventually his health became well restored. Once he got for a few days disconcerting mediastinal interstitial emphysema—the only instance I have experienced of this complication.

In conclusion, I may mention that the following physicians, amongst others, have aided me with their advice or have participated in the treatment at some juncture or other in the course of events in one or more of the cases in this series, and I herewith acknowledge their help with much gratitude: A. Latham, T. D. Lister, Hector Mackenzie, J. J. Perkins, A. G. Phear, Clive Riviere, Jane Walker, R. A. Young, F. W. Burton-Fanning, C. Lillingston, John Hay, A. C. Inman, A. de W. Snowden, A. Lewthwaite, M. F. Squire, L. Whittaker Sharp, Esther Carling, E. G. Colville, C. V. Knight, H. H. Brown, and J. D. McKelvie.

OUTBREAKS OF CEREBRO-SPINAL FEVER IN RELATION TO ATMOSPHERIC HUMIDITY:

INFLUENCE OF THE HUMIDITY OF OVERCROWDING.

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CEREBRO-SPINAL fever, as a disease, being supposed to be comparatively rare in Egypt, some investigation of the question appeared desirable in view of obtaining if confirmed helpful sidelights on prevention for our own more temperate climate.

Moreover, having as the result of previous work[1] in the Dorset District (England) developed the hypothesis that: atmospheric humidity—more especially indoor humidity,[2] operating through overcrowding and insufficient ventilation—was a climatic factor which favoured outbreaks of the disease, when the meningococcus was about, it became important to test this hypothesis for a country like Egypt, where at times a very moist atmosphere prevails.[3] If the observation in regard to comparative rarity of the disease in that country were exact, and our humidity hypothesis otherwise stood unassailed, the explanation could practically a priori only be: comparative absence of the meningococcus in Egypt. And that explanation appeared the more probable in view of the abundant sunshine of Egypt: it being well known that "carrier rates" in England are lowest during summer months, when sunshine is at its maximum.

Scope of Investigation.

To test these various ideas was the principal object of the work with which this paper deals, and for the purpose of

[1] Arthur Compton: Jour. R.A.M.C., November, 1915, 546–570; Comptes rendus, 1915, clxi., 472; THE LANCET, 1916, i., 255.

[2] Arthur Compton: Third Report to the War Office on C.-S.F. in the Dorset District, Nov. 1st, 1917 (not yet published).

[3] "Alexandria ..... is quite unsuited as a residence for invalids, its climate being *damp* and windy; and under these circumstances alternations of heat and cold are extremely trying." Huggard: A Handbook of Climatic Treatment, London, 1906, 189.

the investigation use has been made of a small outbreak of the disease, some 10 cases in all, which occurred in the Alexandria District, E.E.F., during February and March, 1918, just prior to my arrival in Egypt.

In the necessarily brief investigation which it was possible for me to make, for I was limited by military necessity to a three weeks' time-limit, four main points were set out to be investigated: (1) To what extent the Alexandria District was affected by the disease (Studies in Statistics); (2) the relation of the cases in the above-mentioned outbreak to atmospheric humidity (Studies in Outdoor Humidity); (3) to what degree humidity was high indoors—evidence of "overcrowding" and insufficient ventilation—in the sleeping quarters where the cases had occurred (Studies in Ventilation); (4) to what extent the meningococcus was about (Studies in "Carrier rates").

For the investigation I am indebted to Lieutenant-Colonel M. H. Gordon, R.A.M.C., and Major T. G. M. Hine, R.A.M.C., for a small supply of Central Laboratory medium (pea-flour-agar and serum), agglutinating sera of the four defined epidemiological types of meningococci, and West's naso-pharyngeal swabs. In all respects, therefore, the work was comparable, in so far as medium and technique[4] were concerned, with previous work in England.

Statistical Study.

Table I. gives the number of cases (military) of the disease occurring in the Alexandria District for the three years 1915–16, 1916–17, and 1917–18, as compiled from the official "weekly returns" in the A.D.M.S. Office, Alexandria; and for comparison I have given the corresponding numbers dealt with by the Dorset District Military Bacteriological Laboratory during the same periods, the military populations of both areas being approximately the same.

A glance at Table I. reveals that the disease has been rarer in the Alexandria District (Egypt) in the proportion of 40·117=1·2·9=1·3 approx., as compared with the Dorset District (England), for the three years in question. The observation, therefore, in regard to comparative rarity of the disease in Egypt would, from this analysis, appear to be more or less borne out. But, although this is so, it is evident that Egypt is far from being exempt from the disease.

TABLE I.—*Cases of Cerebro-spinal Fever.*

Year.	Alexandria District (Egypt).	Dorset District (England).
July, 1915-June, 1916	22 cases.	55 cases.
July, 1916-June, 1917	3 ,,	49 ,,
July, 1917-June, 1918	15 ,,	13 ,,
—	40 ,,	117 ,,

When the Alexandria District numbers are rearranged in terms of station (camps, hospitals, &c.) the above table becomes instructive. This has been done in Table II.

TABLE II.—*Incidence at Various Stations.*

Year.	Sidi Bishr.	Mex.	Metras.	Mustapha.	Aboukir.	"A" Camp.	Transports and hospital ships.	Hospitals.
1915-1916 ...	3	9	1	—	—	—	4	2
1916-1917 ...	1	—	1	1	—	—	—	—
1917-1918 ...	—	10	—	1	1	2	—	1

Table II. shows that Mex Camp is the centre in the area which has given rise to most cases of the disease, except that in 1916–17 it entirely escaped. But, as will already have been noticed in Table I., during that year only three cases in all are recorded as having occurred in the area. Whether it may afford an explanation or not, it is interesting to note that during eight weeks (July 2nd till August 28th) Mex Camp was quite unoccupied. This camp is ordinarily occupied by British West India troops, among whom during February and March, 1918, the 10 cases of 1917–1918 (Table II.) occurred. It is with these 10 cases that this investigation primarily deals.

Studies in Out-door Humidity.

Of the 10 Mex Camp cases of February and March, 1918, Fig. 1 gives their approximate distribution on an "out-of-doors" 8 A.M. Alexandria humidity chart (from the meteorological readings of Mr. H. Sherif, Kom-el-Nadura Observatory).

As it has not been possible to ascertain the *exact* date of onset of the disease for these cases (see Appendix), this has had to be allowed for. The position of each name on the chart (Fig. 1) is, therefore, that of the day before the date given in official records when the patient was admitted to hospital. Considering an out-of-doors relative humidity of over 75 per cent. as constituting a *moist* atmosphere, it will be seen that the cases practically all occur in connexion with periods when such a standard out-of-doors was exceeded. What it was indoors in the men's tents, where presumably they took ill—which is what we should like to know—is not revealed by Fig. 1, but some idea of what it probably was, will appear presently, when Fig. 2 comes to be studied. Suffice it in passing, then, to note that this small outbreak at Mex Camp, Alexandria, in no way conflicts with, but, on the contrary, fully bears out, our hypothesis connecting the disease with a high degree of atmospheric humidity.

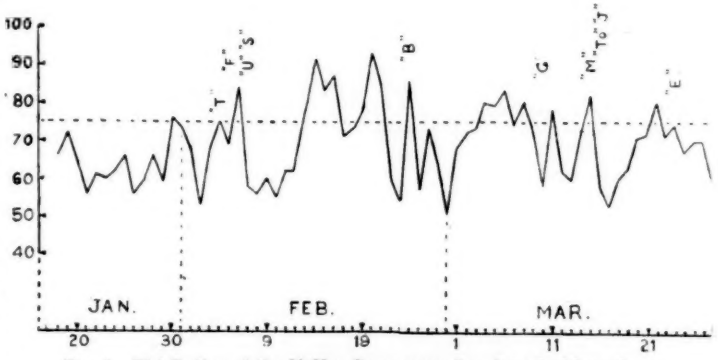

FIG. 1.—Distribution of the 10 Mex Camp cases of cerebro-spinal fever shown on an out-of-doors percentage humidity chart.

Indoor Humidity and Ventilation Studies.

Having previously shown that indoor relative humidity readings taken at "lights out" and at "réveillé," compared with outdoor morning readings, may be utilised as a simple method[3]—which, so far as I am aware, is original—to gauge the efficiency, or otherwise, of ventilation in sleeping-quarters, from the point of view of overcrowding, I have had such readings taken from a particular tent at Mex Camp pointed out to me as where several of the recent cases had taken ill. As suitable controls, corresponding readings were taken simultaneously in a tent and in a hut at No. 21 General Hospital, Alexandria.

That overcrowding and insufficient ventilation, as evidenced by their effects on indoor humidity, may be the better appreciated in what follows, the following additional details in regard to these three sites where hygrometers were installed will be of interest:—

(1) Tent Mex Camp. "Bell" model, of approximately 600 c.ft. capacity in D Co. "lines," 5 men of the British West India Regiment occupying the tent during the investigation.

(2) Tent No. 21 General Hospital. "Bell" model, of the same capacity, occupied during the investigation by 5 R.A.M.C. orderlies, but presumably better ventilated in that the flaps of the tent were always kept well open at night.

[4] See War Office Memorandum on Cerebro spinal Fever. 24/Gen. No. 3595 A.M.D. 2.

(3) Hut No. 21 General Hospital. Hut No. 9 officers' quarters, of approximately 2000 c.ft. capacity (22 × 10 × 9), occupied by one person, the hut having two windows facing the sea practically always open.

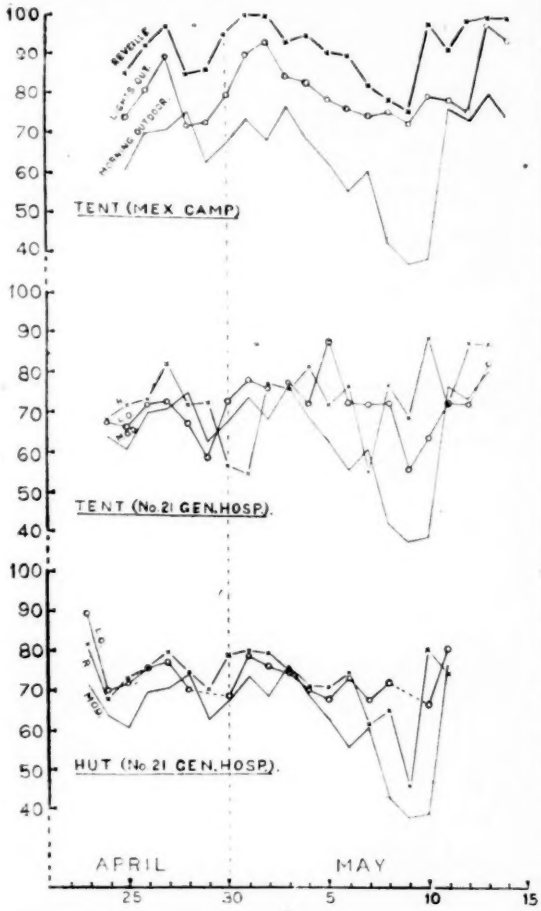

FIG. 2.—Giving a graphic representation of percentage relative humidity in three neighbouring quarters, for the same period.

Fig. 2 gives the graphical representations of the readings taken in the quarters (1), (2), and (3) respectively. To estimate the efficiency, or otherwise, of ventilation from such graphs, the following differential table (No. III.), which is a résumé of data established by us in a previous work,[2] will be required for reference.

TABLE III.

GOOD VENTILATION.	BAD VENTILATION.
1. *Relative Positions of the Three Curves.*	
"Morning out-of-doors" highest, "réveillé" intermediate, "lights out" lowest.	"Réveillé" highest, "lights out" intermediate, "morning out-of-doors" lowest.
2. *Displacement Between the "Réveillé" and "Lights Out" Curves.*	
The displacement is usually *small*, the two curves being, as it were, packed together throughout their course.	The two curves are more or less *widely* separated.
3. *Relation of the "Réveillé" Curve to the Other Two.*	
Its position being intermediate to the other two it generally follows a course related to them more or less mathematically as a *mean* to two extremes.	Rising to a higher level than the other two, being often situated in the region of complete saturation, it follows a more or less *independent* course.
4. *Relation of the "Morning Out-of-doors" Curve to the Other Two.*	
In good ventilation the other two curves being relatively lower, while the "morning out-of-doors" curve is in a sense constant, causes the latter curve to appear comparatively *higher*; as, indeed, it usually is actually.	In bad ventilation the other two curves being relatively higher causes the level of the "morning out-of-doors" curve to appear comparatively *much lower*.

Judged by the criteria of Table III., it will be seen that the curves appertaining to the hut (No. 21 General Hospital) portray a better ventilation than those of the tent (No. 21 General Hospital), and these latter a better ventilation than those of the tent (Mex Camp). In other words, the ventilation in the B.W.I. tent at Mex Camp is shown to be worse than that of the R.A.M.C. orderlies' tent at the No. 21 General Hospital, and that of the officers' hut at No. 21 General Hospital best of all. The importance of this finding will be evident. It points, I think, to insufficiency of ventilation, to deal with the excessive indoor humidity consecutive on the overcrowding present in the Mex tent, as responsible for the outbreak in that camp of February and March, 1918, the meningococcus being about. Indeed, as the "réveillé" curve for Mex Camp (see top diagram, Fig. 2) indicates, as a rule, a high morning humidity bordering on saturation—between 80 and 100 per cent.—it will be obvious, on our humidity hypothesis, that a "carrier" sleeping in such a tent would run a greater risk of developing the disease than if he slept in a tent of the No. 21 General Hospital standard of ventilation and humidity; for, theoretically, as has been emphasised by me elsewhere,[5] good ventilation, by counteracting the effects of indoor humidity, means diminished risk of the "carrier" infecting his comrades and of the "carrier" himself becoming a case.

Studies in "Carrier Rates."[6]

The object in view being to determine to what extent the meningococcus was about, as many men were swabbed in the district as it was possible to handle with the small supply of special medium at disposal and the limited time available. Some 310 non-contacts (from Mex and Mustapha Camps, and Nos. 19 and 21 General Hospitals) were thus swabbed; also, some 24 direct and indirect "contacts" of an actual case, Pte. G. (see Appendix), readmitted to hospital as a case of relapse on April 25th at the time this investigation was in progress.

From two lumbar punctures of April 25th and 26th respectively, a Type III. (Gordon) meningococcus was grown from the cerebro-spinal fluid of the case (G.) showing perfect agglutination up to a serum dilution of 1:400 after 24 hours at 55° C., being quite untouched by Types I., II., and IV. sera.

Contacts.—Of the above case (G.) there were 8 contacts who had inhabitated the same marquee with him during two days (April 23rd to 25th) at Mustapha Camp. These were swabbed on April 26th, and all gave negative results. In addition, there were at Mex Camp 5 men who were doubtful contacts, in the sense that they had been in contact with G. some time previously, and 11 other men who had been in contact with these 5. The 16 were swabbed on April 27th; 15 were negative, and 1 gave a meningococcus-like organism, which subsequently by the agglutination test proved to be non-agglutinable and was reported as negative.

It is not without interest that one of the five Mustapha contacts, Pte. B., was a recovered case, having had the disease in February, 1918 (see Appendix).

TABLE IV.

Date.	Station.	No. swabbed.	(A)	(B)
25.4.18	Mex.	50	5	2
27.4.18	,,	31	2	0
30.4.18	Mustapha.	50	4	0
2.5.18	,,	52	2	1
5.5.18	No. 21 Gen. Hosp., Alex.	55	3	0
7.5.18	No. 19 ,, ,, ,,	12	0	0
8.5.18	No. 21 ,, ,, ,,	60	3	0
	Totals	310	19	3

(A) Number giving meningococcus-like organisms (cult. app. and micros. app.).

(B) Number giving epidemiological meningococci (Gordon)—i.e., meningococcus-like organisms agglutinated by one of the four types of antisera.

[5] Arthur Compton: Comptes rendus, 1917, clxv., 75; Ann. Inst. Past., 1918, xxxii., 130.

[6] I desire here to thank Staff-Sergeant J.W. J. Leighton, B.Sc. Lond., R.A.M.C. (T.), for his valuable assistance in this work.

Non-contacts.—Table IV. summarises the findings with regard to the naso-pharyngeal swabs taken from non-contacts at various centres in the district. The 3 "agglutinable" meningococci found all belonged to Type II. strain; and while 1 agglutinated up to a dilution of 1 : 400, the remaining 2 only agglutinated up to a dilution of 1 : 100. Of the 19 meningococcus-like organisms met with in the naso-pharynx during the course of the investigation, the fermentation reactions of 10 of them which survived sub-culture were determined; as also those of the meningococcus G. isolated from the cerebro-spinal fluid. Table V. gives a summary of these fermentation tests :—

TABLE V.

Lab. No.	If agglutinable. Type.	Fermentation reactions. Gluc.	Malt.	Sacc.	Lab. No.	If agglutinable. Type.	Fermentation reactions. Gluc.	Malt.	Sacc.
62	–	+	+	–	238	–	+	+	–
89	–	+	+	–	316	–	+	+	–
107	–	+	+	–	326	–	+	+	–
116	–	+	+	–	328	–	+	+	–
140	II.	+	+	–	G.	III.	+	+	–
158	–	+	+	–					

Gluc., glucose. Malt., maltose. Sacc., saccharose.

As will be seen, both the epidemiological ("agglutinable") and the other ("non-agglutinable") meningococci found during the course of the investigation all give the same fermentation reactions. This corresponds with previous experience.

As a practical Army measure, however, only "agglutinable" meningococci are recognised as constituting true "carriers." This is based on the teaching of the Central Cerebro-Spinal Fever Laboratory, London, which holds that only men harbouring meningococci agglutinating with standard type sera up to a dilution of at least 1 : 200, after 24 hours at 55° C., as against controls, are to be considered as constituting an immediate source of danger. Meningococci from cerebro-spinal fluids show agglutination up to this titre and, as a rule, beyond.

In the present investigation, in order to standardise results, *complete* macroscopic agglutination, after 24 hours at 55° C., in one or more of the dilutions usually put up 1 : 100, 1 : 200, and 1 : 400, as against the normal serum control, has been recognised as constituting a positive result; this standard having been adopted by me in previous work.

It will thus be seen from the summary of results given in Table IV. that "sample swabbing" in the Alexandria District (Egypt) has only yielded 3 "carriers" among 310 non-contacts swabbed—i.e., a "carrier rate" of only 1 per cent. The standard of the Central Cerebro-Spinal Fever Laboratory, London, being adopted, this "carrier rate" would be lower still.

General Conclusions.

The foregoing studies of cerebro-spinal meningitis in Egypt add little that is new to our knowledge of the disease and its prevention. But, they afford a striking confirmation of the hypothesis previously advanced by us associating outbreaks with a high degree of atmospheric humidity when the meningococcus is about.

A "carrier rate" of only 1 per cent. among "non-contacts" taken at random in the Alexandria District (Egypt), and constituting therefore a fairly good "sample"—as against a rate 10 or even 20 times as high in England under similar circumstances, i.e., working with the same medium and technique—suggests an explanation of the comparative immunity of Egypt from the disease. With the meningococcus so little about, atmospheric humidity in Egypt gets little chance to precipitate outbreaks.

We have indicated by ventilation studies, based on the hygrometric state of the atmosphere met with indoors in occupied quarters during sleeping hours, how the greatest attention requires to be paid to ventilation as a corrective to overcrowding, in view of keeping the indoor humidity as low as possible,—considering the part attributed by us to atmospheric humidity in the ætiology of cerebro-spinal fever.

APPENDIX.

Cases of Cerebro-spinal Fever at Mex Camp during February and March, 1918.

Name and Reg. No.	Regiment.	Date of admission to hospital.	Name and Reg. No.	Regiment.	Date of admission to hospital.
T., 68687	5th B.W.I.	5.2.18	G., 9054	5th B.W.I.	11.3.18
F., 6791	,, ,,	6.2.18	M., 6485	,, ,,	16 3.18
U., 6505	,, ,,	8.2.18	To., 6714	,, ,,	17.3.18
S., 6548	2nd W.I.R. (att. B.W.I.).	8.2.18	J., 6954	,, ,,	17.3.18
B., 6771	5th B.W.I.	25.2.18	E., 6788	,, ,,	25.3.18

MALARIA FROM THE SURGEON'S STANDPOINT.[1]

BY MARGUERITE WHITE, M.D.,
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THE only type of malaria to be considered from the surgeon's standpoint is the subtertian or malignant tertian. In the quartan type the *Plasmodium malariæ* goes through the entire process of reproduction in the circulating blood, and does not especially accumulate in any one organ or produce special effects. The tertian type, produced by the *Plasmodium vivax*, also goes through its life-cycle in the blood, and although the tertian sporulating forms are found in the internal organs, such as the spleen, they do not tend to accumulate in these organs or produce special effects. The third type, the subtertian or malignant tertian, caused by the æstivo-autumnal parasite, sporulates almost entirely in the internal organs, attacking any organ and producing symptoms peculiar to the disease of that organ: on the heart causing endocarditis or myocarditis, on the lung a pneumonia, on the spleen a splenitis and perisplenitis, on the pancreas an acute hæmorrhagic pancreatitis, on the liver a hepatitis, &c. Castellani and Chalmers, in writing of subtertian malaria, say:—

"These parasites seem to affect the red corpuscles so profoundly that they are liable to adhere to the walls of the capillaries, in which the parasite sporulates: hence it may produce severe local symptoms, due to the mechanical blocking of capillaries and the intense local action of the toxin; thus it is associated with what is called the malignant fevers—i.e., the fevers which produce local effects on one or more organs."[2]

In two and a half years on the island with the British Expeditionary Forces the number of cases I have seen in which malaria has proved to be the direct cause of surgical ailments referable to one organ have been comparatively small and with a very small mortality. Malaria as a complication in surgical cases and malaria simulating certain diseases are far more common, especially the first, where all the symptoms may indicate some other illness, for instance, after a gunshot wound of the head (and this is frequent) the symptoms may all point to a cerebral abscess, but under quinine therapy the urgent symptoms disappear and recovery is uninterrupted.

The classification is only made for the purpose of descriptive surgical pathology. Clinically, it is all malaria, and the treatment spells quinine and quinine only. In some of the sequelæ of malaria surgery may have to be resorted to, as in cases of ruptured spleen or the splenomegaly of chronic malaria, drainage of the abdomen in malarial cirrhosis, &c. Decapsulation of the kidney has also been done for suppression of urine in cases of blackwater fever on the island.

Reports and Discussion of Cases.

A number of cases were recorded, but space does not permit of all being printed.

CASE 2. *Acute hæmorrhagic pancreatitis due to malaria.*—Patient, aged 26, invalided for malaria and admitted with this complaint. He was in hospital about six weeks; he had three slight attacks of malaria (subtertian), rings and crescents found in blood. The clinical findings were nil, except a palpable spleen, temperature in each attack not

[1] Paper read before the Conference of Medical Officers, Malta.
[2] Text-book on Tropical Medicine, by Castellani and Chalmers.

higher than 102° F.; patient recovered rapidly from attacks. General health excellent; sent to convalescent camp and a few weeks later to active service camp. After about a week at the latter he was readmitted as a surgical case. While on duty, he was suddenly seized with a severe pain in upper abdomen; carried to his tent. He was sent to hospital immediately.

On admission he was very collapsed, sweating profusely; pulse 120, weak and intermittent; abdomen distended and rigid, with marked resistance in epigastrium; drawn anxious look; temperature 98°; a few hours later 101°; appeared very ill. At laparotomy a few hours later there was some free bloody fluid in the abdomen; pancreas was enlarged and congested; small petechial hæmorrhages and fat-necrosis in surrounding tissues and mesentery. Appendix normal; liver and spleen slightly enlarged and congested. The abdomen was closed without drainage; intramuscular quinine gr. 10. During the first 24 hours after operation he collapsed twice; stimulants, artificial respiration, and oxygen. Next day he was much better, but sweating profusely. After this, under quinine, recovery was rapid and uninterrupted. He was allowed up at end of second week. Temperature became normal on the third day and remained so as long as patient was in hospital.

I have seen one other case on the island in which the diagnosis was made of acute pancreatitis, which cleared up rapidly under quinine. Surgical interference is contra-indicated, as the pancreatitis is due to a capillary thrombosis formed by the massing of the parasites and pigment.

These malarial abdominal infections are always due to the subtertian parasites, and if the parasites attack one particular organ there will be symptoms referable to that disease. In this case the pancreas was the principal organ to be attacked, and the symptoms were those of an acute pancreatitis from other causes. This explains the rapid recovery of these patients under quinine therapy if promptly and efficiently given, otherwise they rapidly die, or the organ becomes so damaged that it is unable to perform its function.

Pseudo-appendicitis.—I have seen many of these cases on the island due to malaria, which cleared up rapidly under intramuscular quinine. If the diagnosis is made surgical interference is not necessary. The cause of the pain on the right side is, I believe, a referred pain due to an acute splenitis, which, in my own observations, has always been present, although in some cases it may be due to the localisation of the parasite in the intestinal mucosa.

I have had many cases of appendicitis, both catarrhal and suppurative, in malarial patients and the only point in the differential diagnosis, as far as I have been able to observe, is the white cell count. In both classes of cases all Murphy's symptom-complex are present except leucocytosis—i.e., pain, vomiting, a little temperature, and rigidity of the right rectus. In pseudo-appendicitis or pseudo-cholecystitis due to malaria one finds a marked leucopenia, with a decrease in the polymorphs and a high mononuclear count. In true cases of appendicitis complicated with malaria one finds a relative leucocytosis, with an increase in the polymorphs. The non-discovery of the malarial parasites in the peripheral blood is of no account in the diagnosis.

Malarial attack following operation.—The following explains why an operation brings on an attack, and often of a very severe nature, and nearly always atypical in persons who have never previously suffered from one.

"It is a well-known fact that the plasmodium can exist in the spleen of persons who show no signs of fever or malaria cachexia, and go through their life-cycle there, but it would appear that they are restrained from invading the circulation by the action of some antitoxin and, therefore, do not increase to such numbers as to cause toxic symptoms. Thus it is obvious if the restraining influences which conduce to the condition of latent malaria are removed, an attack of malaria will follow."[3]

It is practically always the condition of latent malaria in patients which is the most annoying, though rarely fatal, complication in surgical cases. These patients give no history of having had malaria, and usually a history of perfect health up to the time they were wounded. The surgeon operates quite confidently that everything will be all right, then 24 to 48 hours after operation an impending attack of malaria is often foreshadowed by these symptoms, and I have noticed this especially in bone and joint cases. The patient complains of severe pain in the wound; the latter looks unhealthy; joints often become very swollen and exquisitely painful, the least movement causing much pain. The temperature at this time is subnormal, but in a few hours rises to 105° or 106°, without a rigor. If I happen to see the patient at this stage, I give immediately quinine gr. 15, intramuscularly.

I have had a number of these cases under my care, and have found that the impending attack cannot be prevented by giving quinine at this stage, although it may be considerably shortened, and by giving another dose, also intramuscularly, the next day a second attack is rare.

Delayed wound healing is also a feature in this type of case. Wounds look unhealthy, granulate over, only to break down again in a few days. Some of them resemble syphilitic sores, and often it is only with a negative Wassermann and response to quinine therapy one becomes convinced that malaria is the ætiological factor.

I have never seen these conditions in known treated cases of malaria. As a prophylaxis against post-operative attacks of malaria I have found 15 gr. of quinine intramuscularly the night before operation extremely valuable.

CASE 7. *Camouflaged malaria.*—Patient aged 21. Service 3½ years. Had been in Salonika one year. Admitted to St. Elmo Hospital on diagnosis of gunshot wound of right elbow-joint. No history of malaria or dysentery; had felt well up to time he was wounded. On admission temperature 102°, pulse 118. Patient very weak and anæmic; great pain in arm; headache, dizziness, and ringing in ears. Examination revealed very little apart from the wounded arm, which was swollen, cyanotic, and tender from shoulder to finger-tips. Elbow especially swollen; pus streaming out of a pin-point opening on anterior side just over brachial artery. Glands in the axilla were enlarged and tender. Day after admission severe headache; face very flushed. He had several fainting attacks; proposed operation for drainage of elbow-joint postponed. Temperature 102°; pulse 130, very weak and intermittent. Strychnine and digitalis were given during the day.

Next day his general condition had improved somewhat, and under ether anæsthesia the elbow-joint was drained; no attempt at resection on account of serious condition. During the next two days he improved greatly. Temperature not above 99° and pulse 100; ate well and slept well; complained of nothing but a feeling of giddiness, which he said he had had for some weeks before he was wounded.

On the evening of the second day following his operation, without any warning, and while talking, he had three severe epileptiform convulsions, became very violent, and relapsed into unconsciousness. Next morning, as he was still unconscious, a lumbar puncture was done; spinal fluid under greatly increased pressure, but clear. A white blood count was made and film taken for malaria; catheterised specimen of urine showed a faint trace of albumen, but no casts. The bacteriological report of spinal fluid negative; sugar reaction present. Films negative to malaria. White blood count was 8600; polymorphs, 60 per cent.; lymphocytes, 29 per cent.; large mononuclears, 5 per cent. Patellar reflexes were absent; Babinsky and Kernig signs absent; some slight retraction of head. Major W. H. Kiep examined the eyes; report negative.

During the next 24 hours patient still remained unconscious; temperature, 102°; pulse, 130; involuntary urination and defæcation. Lumbar puncture; fluid still under greatly increased pressure, but clear; bacteriological report as before; films again negative to malaria. The arm looked unhealthy and the edges of the wound gangrenous, with a very offensive odour; amputation was discussed, but decided to try intravenous quinine first. Quinine hydrochlor., gr. 15, in 10 oz. normal saline given; another lumbar puncture at same time. Two hours after the injection he commenced to perspire profusely; 16 hours later perfectly conscious; temperature, 98°; pulse, 90; patient very weak.

From this time recovery was uninterrupted, quinine hydrochlor., gr. 15, was given daily intramuscularly for a week, then twice a week for four weeks. The arm cleared up rapidly. During the next ten weeks in hospital he had no further rise of temperature and was sent to England as a walking case. Malaria parasites were never found in the blood, and the spleen was only just palpable.

This was a case of camouflaged malaria, where all symptoms indicated some other illness. The septic condition of the arm followed by the sudden coma pointed to an extension of the infected foci to the brain, with a resulting cerebral abscess, especially with the negative history of malaria and the absence of parasites in the blood. The white cell count and the absence of any localisation symptoms were the only two factors in the probable diagnosis of a cerebral malaria. Later the prompt response to quinine therapy and the rapid recovery left no doubt as to the diagnosis.

[3] From Text-book of Castellani and Chalmers.

The complications of camouflaged malaria are the most fatal in surgical cases, as they are usually rapidly fatal, and while one is trying to make a diagnosis the patient dies. Castellani, in writing of cerebral malaria, says:—

"No diagnosis of hemiplegia or of any brain or spinal disease without such obvious cause as traumatism should be made in malarious districts without first examining the blood to see whether the subtertian parasite is present."

I do not think he goes far enough in this statement, as in the most serious and fatal of my cases parasites have never been found in the peripheral blood. Splenic punctures have not been made, or the parasite would undoubtedly have been found there, but I have relied on the white cell count, especially in the presence of suppuration and the large spleen, and corroborated it by the final test of the response to quinine therapy.

A case (No. 8) was recorded of *purpura hæmorrhagica* due to malaria, or, as Castellani calls it, hæmorrhagic pernicious fever. Fortunately this very fatal complication is rare. The hæmorrhages appear during the attacks but never during the intermission. Untreated it rapidly produces severe anæmia, with thread pulse, delirium, and death; often all treatment is of no avail. Operations on these patients are absolutely contraindicated unless it is the question of the life of the patient, and then every precaution should be taken to guard against and prevent hæmorrhage. Even the extraction of a tooth has led to fatal results in these cases.

The relation of quinine to hæmorrhages is still a debated question. My own experience tends towards the view that the quinine has very little, if anything, to do with it. Where I have observed a tendency to hæmorrhage in malarial patients post-operative or otherwise I always give quinine hydrochlor. in small doses, with large doses of calcium lactate and, if necessary, horse serum.

The last case recorded (No. 9) was one of amputation of the leg. The most interesting thing about this case is that for nearly two years under certainly not the most ideal conditions in Salonika the patient had no relapse of malaria in a known subtertian infection. I mention the case especially as it proves that the parasite may remain dormant for years in the system and the patient in perfect health. Suddenly it may light up when the vitality of the body is lowered and produce an attack of a very serious nature. Also the sudden acute dilatation of the heart in these cases is very common, often proving fatal.

Conclusions.

These surgical manifestations, complications, and sequelæ usually result from a neglected and undiagnosed malaria or from a malaria inefficiently treated with quinine. The fact that there have been so few on the island speaks well for the promptness and efficiency of the treatment and the correctness of diagnosis.

There is no difficulty in recognising the quartan and the simple tertian variety, as the attacks are usually typical and parasites can always be found in the peripheral blood if films are taken at the proper time. The difficulty in diagnosis is the subtertian, with its many masks and innumerable sequelæ; and it is this type which is most often untreated because undiagnosed.

It is to be doubted whether any of us realise sufficiently what a protean disease malaria is, and the points to be emphasised are:—

1. That an operation often brings on an attack of malaria of a very severe nature, and an acute dilatation of the heart during or following an operation is very frequent, often proving fatal, and the utmost precautions should be used in regard to anæsthetics for these malarial patients. Ether given by the Vernon Harcourt method is the safest; chloroform, in my opinion, is absolutely contraindicated.

2. That the malarial parasites of subtertian malaria may attack any organ, giving all clinical symptoms of disease of that organ, as the surgeon who has no experience of malaria will find to his cost.

3. That the negative history of malaria and the absence of parasites in the blood is of no account in the diagnosis of a positive malaria.

4. That in a malarial patient convulsions and coma occur in an apparently healthy man without any warning, and that it is not uncommon for a man with acute cerebral malaria to be arrested for drunkenness; and that in every case of brain or spinal disease, or other obscure complaints occurring in men who have been East, malaria is one of the first things that should be considered by the surgeon.

5. That the subtertian malaria may simulate almost any disease, surgical, mental, or medical. It may produce such insidious symptoms that when the patient feels ill enough to see a doctor treatment is of little avail.

6. In the acute attacks there may or there may not be a chill, and parasites may or may not be found in the blood in this type.

The patient may have no idea himself that he has malaria, and herein lies the danger. A man with a subtertian infection is always in danger of his life, and too much importance cannot be attached to the question as to the care of these malarial victims in England after they return to their homes. As Professor Osler wrote some years ago: "There is no other disease which compares with it, except perhaps tuberculosis, in the extent of its distribution and its importance as a killing and disabling disease."

Clinical Notes.

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF MULTIPLE EPULIDES.

BY W. WARWICK JAMES, F.R.C.S. ENG., L.D.S.,
DENTAL SURGEON, ROYAL DENTAL HOSPITAL; ASSISTANT DENTAL SURGEON, MIDDLESEX HOSPITAL, ETC.

IN the following case the growth of a fibrous epulis (to be more definite, hypertrophy of the fibrous tissue of the gingival muco-periosteum) has been associated with each tooth of the temporary and permanent series which has erupted.

Account of Case.

The patient, a girl now aged 11, was admitted into hospital in May, 1912, when a portion of the tissue was examined microscopically. Some uncertainty existed as to its nature. A further section showed it to be purely fibromatous.[1] The gingival margins were considerably enlarged and nodular. The tissue particularly involved was apparently the gum margin and the neighbouring portion, but not the greater part of that covering the roots. As the result of treatment it would seem that the periodontal membrane is also involved, the bone is not involved; X ray photographs showed no changes. The growth had extended round the crowns, in parts even reaching to the top of the teeth, and also in thickness. In the early stages it appears markedly vascular and somewhat denuded, but later it seems less vascular and is mottled with faintly yellowish-brown patches. There was no tendency in the tissue to break down except where injured by opposing teeth. Growth is slow, the increase being marked by months rather than weeks. Patient suffered no pain; general health seemed affected, probably owing to difficulty in eating. The growth superficially resembles a simple fibrous epulis, but is sessile, while the simple epulis is nearly always pedunculated.

Of particular interest is the effect of treatment, and this coincides with the records of other cases, and of that of a simple fibrous epulis. Seven separate operations have been performed and an attempt was made to save the teeth, but recurrence followed. All the temporary and eight of the permanent ones have been extracted, the growth completely excised, and the margins of the alveolus removed. The stages of the operations were as follows: All the temporary incisors and the first temporary molars were extracted and the growth removed, whilst the abnormal tissue was cut away freely down to the bone margin round the remaining eight teeth. Where the teeth remained the growth recurred and in July, 1912, the four molars were removed as being less accessible than the canines, and the tissue again pared away round the latter. In October, 1912, the canine teeth were similarly treated. The child was now nearly 5 years old.

No change took place for about two years, nor was there any sign of a similar growth until after the first permanent molars appeared, when the condition recurred in about a year and the previous operation was repeated. In October, 1917, the maxillary incisors had erupted, with recurrence of the condition, and although it was suggested upon the lower incisors it was not marked. An operation removing the tissue around the upper incisors without the teeth was unsuccessful and the teeth were removed in November.

The present condition shows the lower canines involved, also the left lower second premolar, which is erupting into the socket of the first permanent molar. The same change

[1] THE LANCET, 1919, i., 744.

is taking place with regard to the right upper premolar, which is erupting into the socket of the first permanent molar. The gum presents the reddish, somewhat denuded appearance described, which seems the first indication of the growth, although in parts it is reaching the nodular stage. The patient has been wearing a vulcanite block to bite upon; the pressure from this seems to have arrested the development of the condition in one part.

Remarks.

The child has been strong and healthy from birth, except for whooping-cough and an attack of what the mother describes as "dry eczema" prior to the appearance of the mouth condition at the age of 3 years. No rickets. She was not nursed for more than a few weeks.

She is not a mouth-breather, a fact of interest, as much hypertrophy of the gingival tissues is frequently seen in the front part of the mouth in such patients. Such a condition is of an infective nature, and the changes are in marked contrast to those in the present case. In mouth-breathers the swelling of the tissues conforms accurately to the line of contact with the lips, so that when the lips are pulled back there is no hesitation in saying that mouth-breathing exists. In cases of hypertrophy the lips may be apart on account of the bulk of the growth. The condition in this patient would probably be described as hypertrophy, and although a certain number of cases have been recorded, they are undoubtedly rare.

The hypertrophy seen in adults is generally due to chronic infection, and involves the bone as well as the gingival tissue. Perhaps the commonest type is a marked thickening of the bone and the gum in the region of the maxillary molars, although several cases have been recorded where the whole of the alveolar margin has been involved, but the maxilla appears to be affected more often than the mandible in children.

Christopher Heath has described a similar case to the one now reported. Cases mentioned by him occurred at the ages of 8, 2½, 7, 4, and 2 years, the three latter in one family. In all the cases recorded the mental condition was defective. In another case recorded, very similar to the present one, the child was 4½ years old and healthy. After describing this case, he says, "In conclusion I should say that nothing less than complete removal of the affected alveolus seems to offer any hope of alleviating these cases." As far as I can ascertain, the length of history of this particular case is greater that that of any recorded cases.

As it is difficult definitely to classify these cases, the term epulides is used in its widest sense, but if they were allotted to a definite class, it is probable that hypertrophy would be the correct description. It seems a very drastic procedure to remove every tooth and so render the child edentulous. It is true we can provide an artificial substitute, if nothing short of extraction can be accomplished.

A CASE OF HERMAPHRODISM.

BY W. DANNE, L.R.C.P. EDIN., L.R.C.S. IREL.

THE following case is described on account of its rarity. The only similar one I can find is in the 1891 edition of "Diseases of Women" by Gaillard Thomas, but in his case there were both scrotum and testicles. It would be interesting to learn if anyone else in this country has seen a similar instance.

Quite lately a woman with well-developed breasts and nothing characteristic of a male in her voice or general appearance was brought to me. She was 40 years of age and was going to be married soon, but as she had a "lump in the privates" she wished me to remove it. On examination there was no trace of a vagina and the "lump" proved to be a small, well-formed penis, with prepuce, which could be retracted and the glans exposed. This penis was capable of erection, and per urethram she menstruated regularly every month as well as micturated. Also she appeared to have nocturnal emissions at intervals, with sexual feeling. Per rectum the anterior rectal wall was very thin, and through it, lying towards the left, could be felt a modified uterus of a fair size, but with only one cornu. I could find neither ovaries nor testicles, and no evidence of a scrotum.

I told her nothing could be done to fit her for marriage, and this opinion was confirmed by Mr. D. C. Rayner. As she still was anxious that something should be done I sent her to Dr. James Oliver, who agreed that it was a case for which no operation was possible.

Bristol.

Reviews and Notices of Books.

The Early Diagnosis of Tubercle. (Oxford Medical Publications.) By CLIVE RIVIERE, M.D., F.R.C.P. Second edition. London: Henry Frowde; Hodder and Stoughton. 1919. Pp. 314. 10*s.* 6*d.*

THE second edition of Dr. Riviere's book on the early diagnosis of tuberculosis is quite a bulky volume for a work limited to a single aspect of one disease. The author in his preface notes that the present edition has been revised and expanded, and that, for the first time, a fairly adequate description is given of hilus tuberculosis in the adult. This book is excellent, but it is impossible to read it without coming to the conclusion that the author has evolved a machinery so complicated that many of his readers will feel baffled as well as helped by it. As he says: "..... Many of the older methods have been amplified and improved, and valuable new ones have been introduced." Would that he had been more willing to "scrap" as well as to amplify and improve! The author is an enthusiastic "percussionist," and he attaches far more importance to percussion than to auscultation of the chest. There can be no doubt that he has reduced, or let us rather say exalted, percussion to a fine art. Take the following sentence for example:—

"Gentle percussion is of two kinds: (*a*) One in which the soft stroke is 'carried through,' whereby the depths of the lung are reached more truly than by heavy percussion; (*b*) what may be called light, 'flipping' percussion directed to the discovery of surface changes, and whereby a thickened pleura may, perhaps, be distinguished from impairment due to underlying lung."

It is clear that the author has not only assimilated all the available teachings of the art of percussion; he has added to it himself. But there is surely as little hope of his readers gaining the same skill in percussion as of Paderewski turning out pianistic replicas of himself by writing a text-book on his art. The author's praise of the X rays is measured, and he has found that in most cases they are superfluous. Having damned them with a halting testimonial, he proceeds to give an excellent account of their interpretation in disease of the lungs—an account which is the more concise, objective, and detached for being given by an agnostic. The chapter dealing with tuberculin reveals the author's wide knowledge of a subject obscured by the prodigious output of mediocre workers; and he has reduced his encyclopædic raw material to an eminently readable and concise finished product. But in the chapter on the temperature he has edited his sources of information with less discrimination, and instead of confining himself to the best monographs on the subject, he quotes over a score of writers, leaving the reader to pick out what he likes best. Part II. deals with tuberculosis in children and represents about one-third of the book. Here the author contributes much useful information, full measure, pressed down.

This book is first-class matter from a first-class source; its chief fault in this age of hustle is a surfeit of information, and it is to be hoped that the third edition, which will no doubt soon be called for, may show more signs of condensation than of expansion.

Dental Surgery and Pathology. By J. F. COLYER, F.R.C.S., L.D.S., Dental Surgeon to Charing Cross Hospital and the Royal Dental Hospital; Examiner in Dental Surgery, Royal College of Surgeons of England. Fourth edition. With illustrations. London: Longmans, Green, and Co. 1919. Pp. 899. 32*s.* net.

THE importance of a knowledge of pathology to the dental surgeon can hardly be over-estimated; for now it is becoming universally recognised that the gravest results may follow septic processes in the mouth, and that many general diseases are to be attributed directly to infection proceeding from this source. It is clear, therefore, that we must look to the dental surgeon for the recognition of the existence at an early stage of those septic conditions which may, if neglected, prove to be the forerunners of very serious morbid conditions. Dental students, therefore, are fortunate to be in a position to possess such a work as this in which the true principles of pathology in relation to the teeth are fully expounded and clearly enunciated. The ideal principle of dental treatment

should ever be the prevention of sepsis, and the ideal of dentistry will only be attained when preventable diseases associated with the teeth shall have ceased to exist.

Mr. Colyer has described fully all the abnormalities to which teeth are subject, and the methods by which these abnormalities may be remedied; he has discussed very thoroughly all the theories as to the nature and causes of caries, and he comes to the conclusion that the prevalence of caries in modern races is due to the soft character of the food and the increase in the use of carbohydrates which undergo rapid fermentation. The importance of periodontitis is fully recognised, and the author finds that the evidence points to the disease being started by injury of the gingival margin from food débris or by the local action of toxins as seen in the marginal gingivitis of mouth-breathers; and the prevalence of the disease at the present day he attributes to the character of modern diet, for much of our food is prepared in such a way that it accumulates readily round the teeth and is of a nature easily to undergo fermentation. The chapter on fractures of the jaw is adequate, and no excess of space is devoted to gunshot fractures, for in civil practice such fractures are very rare.

There are two points in this work that deserve special mention. One of these is the very full provision of illustrations—a sufficient number of illustrations goes far to assist the student in the thorough comprehension of a subject. The other point is the very complete index. A work like this should prove of interest not only to dental students and dental surgeons, but also to very many members of the medical profession who have nothing directly to do with dentistry; from it they will learn much that will be of value in the treatment of patients suffering from many diseases, and they will appreciate more fully than many do now the importance of early attention to morbid conditions of the teeth in the treatment of disease in other parts of the body.

JOURNALS.

The British Journal of Children's Diseases. Vol. XVI., April-June. Edited by J. D. ROLLESTON, M.D.—Dr. Edmund Cautley contributes an article on Duodenal Stenosis, in which he reviews the literature and reports a personal case in a male infant aged 12 months. He states that the characteristic feature of the condition is vomiting, with the usual signs of obstruction. It may occur even if no food is given by mouth, the stomach becoming distended by normal secretion. Bilious vomiting occurs in about 90 per cent. of the cases, and if the obstruction is above the entrance of the common duct is probably due to an aberrant branch opening into the dilated first part of the duodenum. Hæmatemesis is not uncommon. Inanition, wasting, and constipation naturally develop. If food is taken and life prolonged, as in some cases in which adult life and even middle age have been reached, the stomach and first part of the duodenum become dilated and hypertrophied, and there is marked gastric peristalsis. The symptoms are practically the same as those of congenital hypertrophic stenosis of the pylorus, unless bilious vomiting is also present. A dilated first part of the duodenum gives the sensation of a pyloric tumour, but it is neither so hard nor so defined as in pyloric hypertrophy. No medical treatment is of real benefit, but life has been saved in isolated cases by early operation. Many of the infants are premature. In Dr. Cautley's case an exploratory operation was made, but the state of the child did not warrant gastro-enterostomy and death took place a week later. At the autopsy the stomach was found to be dilated and hypertrophied, and the pylorus widely dilated. The first part of the duodenum was dilated into a more or less spherical sac over 2 in. in diameter. The second part for a distance of an inch was extremely stenosed, merely admitting the passage of a probe, and the duct entered about the middle of the stenosed portion. There were no other abnormalities.—In a paper on Catarrhal Jaundice in Children, Dr. E. Bronson reports a number of cases of catarrhal jaundice associated with influenza in children, and classifies them under the following groups: (1) those in which jaundice followed exposure to influenza, but which did not develop influenza in the ordinary sense; (2) cases which developed jaundice as a sequel to an attack of influenza; (3) doubtful cases in which there was no known exposure to influenza.—In a Note on Influenza in Infants, Dr. C. Achard, of Paris, states that though one of the peculiarities of the present epidemic has been the rarity of the disease at this age, he has had the opportunity of observing 32 cases under 2 years of age in the creche at the Hôpital Necker. In six cases the disease was uncomplicated and recovery took place, in 12 there was bronchitis or slight pulmonary congestion with one death, and in 13 broncho-pneumonia developed with seven deaths. Achard concludes that influenza in the infant is by no means exceptional, and that the form and gravity of the disease may vary. The infant does not possess any real immunity but is merely less exposed to contagion from without, the infection being chiefly contracted from the mother.—Mr. Ralph Thompson records a case of Ectopia Vesicæ, in which he performed a successful operation in the fifth month of life. In his discussion of the anatomy of the condition he comes to the following conclusion: (1) Ectopia vesicæ is a body cleft due to the formation of a groove in the allantois, which secondarily affects the cloaca; (2) epispadias is not analogous to hypospadias, but is evidence of a bifid or double genital eminence being formed from the cloaca which is cleft secondary to the allantois; (3) the cause of the deformity must be above rather than below.—A case of Urethrocele is described by Mr. Pybus in a male child, aged 3 years. The penis was considerably enlarged, measuring 3½ inches in length, and became ballooned during micturition. The urine was ammoniacal and contained pus. Death took place a week after an operation at which the redundant portion of the urethra was removed. The autopsy showed considerable hypertrophy of the bladder, marked dilatation of the ureters, and of a less degree of the renal pelves, one of which was inflamed.—Dr. Parkes Weber and Mr. T. H. Gunewardine report a new case of Lipodystrophia Progressiva in a girl aged 12½, in whom the disease had set in five years previously.—Dr. John Thomson contributes a note on a case of Myasthenia Gravis in a girl aged 11½ years, which proved fatal in nine months' time.—Mr. Haldin Davis gives an account of the Willesden Ringworm Clinic, which he established in the spring of 1913, since when 441 cases had been submitted to X ray treatment. No instances of X ray burn or permanent alopecia occurred. Owing to the speed with which cases can be cured by X rays, Mr. Davis states that the cost of treatment is nearly defrayed by the additional grant earned from the Board of Education and by the saving of school time which would have been lost under the older, slower methods of treatment.—A Retrospect of Otology, 1918, is contributed by Mr. Macleod Yearsley.—The abstracts from current literature are devoted to acute infectious diseases, disorders of metabolism, diseases of the urogenital system, dermatology and syphilis, and otology, rhinology, and laryngology.

In the *Military Surgeon* (Washington, D.C., U.S.A.) for April Colonel Qualls and Captain Meylackson give an account of a large venereal clinic in Maryland. The clinic received about 50 fresh cases daily; some 85 per cent. of the infections were contracted in civil life, 9 per cent. of whites and 39 per cent. of negroes being found infected on entry. Details of the organisation required to deal rapidly and effectively with this mass of cases are given, and should be read by all interested. In 13,159 persons treated by prophylaxis 126 cases developed, but only 11 amongst those who took the treatment within an hour of exposure.—Captain L. C. Frost insists that cases of shell shock must be treated at once by experts within the battle area.—Colonel Lynch and Lieutenant-Colonel J. G. Cumming urge that infection of sputum-borne diseases in the army occurs rather through mess utensils than by the air of the barrack-room, and set out the need for washing these in water that is boiling. They found that in certain civilian groups, numbering in all 20,000 people, those whose dishes, &c., were machine-washed suffered far less from influenza than did those whose mess-kits were washed by hand. They desire to see a lavatory established near the mess-room in all barracks, so that the men may get into the disease-averting custom of washing the hands before each meal. They found that even in a smart regiment not quite a quarter of the men do so now. The U.S. base hospital at Etretat learned to save their orderlies from trench fever by cleaning patients on entry, and by putting the orderlies dealing with new entries, their clothing and effects into louse-proof suits, double pyjama suits sprayed with creosote oil. One clerk appeared to have become infected through carelessly sitting on the stretchers of the new entries while taking their "particulars."—Major Dodge, reporting on 638 operations for hernia, mentions that after it became a routine for all operation cases to gargle with a 1 in 10,000 solution of quinine sulphate post-operative pneumonia ceased to occur, and no one using that gargle got pneumonia during the October influenza epidemic, though several had influenza. The quinine gargle is supposed to be specific against the pneumococcus.—Lieutenant-Colonel J. T. Rugh discusses leggings and puttees, and concludes that no complaint can be made against them if they fit.

CENTENARIANS.—**Mrs. Esther Carter died recently** at East Molesey, Surrey, in her 102nd year. The deceased was born at Weymouth, and visited her birthplace upon the 100th anniversary of her birthday.—Miss Eleanor Patteson, who completed her 100th year two months ago, died on July 18th at Bath.

THE LANCET.

LONDON: SATURDAY, JULY 26, 1919.

An American Hospital in London.

WE publish in another column the account of a notable meeting held at the House of the Royal Society of Medicine on Thursday, July 17th, when the formal foundation was inaugurated of an American Hospital in London, to be a rallying point for American post-graduate students and all members of the medical profession in America sojourning on our side of the Atlantic; to be the natural shelter for American citizens in our midst and needing hospital attention; and (to quote the words of the main resolution epitomising the movement) "to commemorate the coöperation of the medical men of the United States and of Great Britain during the European War and to strengthen the friendship existing between the two nations." Lord READING, who presided at a meeting which was characterised alike by the brevity of the oratory and the directness of the results, said happily and wittily that the case for the foundation of an American hospital in London was so strong that had he been sitting "in another place" he must immediately have given judgment in favour of its supporters. And this must be the verdict of all who have thought over the matter.

The foundation of the American Hospital in London has been largely the conception of Mr. PHILIP FRANKLIN, an American citizen some years resident in England, a Fellow of the Royal College of Surgeons of England, and a member of the honorary staff of many institutions, civil and military. To his energy, prevision, and tact the fact is owing that the hospital has now been definitely founded, and founded with the remarkable promise of success which is sufficiently indicated by the names pledged to support it. And if ever the right seed was sown in the right soil at the right time this was such a fortunate sowing. Mr. FRANKLIN has practically found no critics of his idea or intention, though we may be perfectly certain that he came across many whose approval was more verbal than practical. We have in these columns on many occasions alluded to the fact, not so difficult of explanation as it may appear, that the vast city of London has not hitherto been recognised as a centre for post-graduate medical teaching by foreigners, while until recently what post-graduate teaching there has been has been individual, sporadic, and ill-organised. Greater London, with a population of about seven millions and an area of seven hundred square miles, containing within its boundaries all sorts and conditions of men contracting, or liable to contract, every pathological condition that can occur in an inclusive index of disease, has never been sought out by foreigners, and not even by our blood relatives who speak our tongue, the Americans, as a post-graduate centre. The fault has been our own, and is only partly condoned by the fact that the enormous figures concerned have rendered any complete system of inter-organisation difficult. Our wealth of material has never until now properly been centralised; our far-scattered hospitals have only recently begun to join in a unified plan of education; while for the stranger, and even for the American guest, there has been as yet no centre at which he could obtain information or get into some human relations with his professional colleagues in this country.

The American Hospital is to prove itself a visible sign of a complete change of spirit. As is well known, there is in London now a post-graduate scheme in connexion with the Fellowship of Medicine, and this organisation, started on emergency lines, is sure to develop into a permanent organisation. The American Hospital, over and above its position as a general hospital ministering to American needs, will be the place where the American doctor will turn instinctively when he arrives on our side of the Atlantic for multifarious information as to how, having such and such time at his disposal, and such and such money to spend, and such and such plans for the completion and development of his medical education, he should best proceed. The information given him will enable him to make full use of such post-graduate organisation as we have, while his presence among us will spur us on to see that that organisation is good and intending to be better. Then will London take its rightful place as a great post-graduate centre.

The Study of Wound Shock.

THE fundamental cause of wound shock still remains obscure. With this confession of ignorance Captain N. M. KEITH, R.A.M.C., opens a report[1] of the special investigation committee set apart by the Medical Research Committee to inquire into surgical shock and its allied conditions. And he goes on to say that, while no single ætiological factor can be recognised as the invariable initial cause, the various secondary factors which obviously contribute in many instances towards the production of the finished article are in no better case, as when these are eliminated by early preventive treatment the condition of shock often persists nevertheless, and the patient succumbs. KEITH'S contribution is to make quite clear that reduction of total blood and plasma volume are striking and important features in wound shock; that after moderate hæmorrhage without shock the total blood volume is rapidly restored, while in shock itself recovery is accompanied by restoration of blood volume. An important indication in the treatment of serious cases of wound shock, therefore, is to increase the amount of fluid in the circulation, which can only be done by intravenous infusion. His observations help to diminish the complexity of the pathological picture of shock and to replace the vague assumption of nervous influence by substantial knowledge of altered blood states and changed blood volumes.

When KEITH began his work at a casualty clearing station in the spring of 1918 our conception of the pathology of wound shock was, speaking broadly, that of a condition of circulatory failure with low blood pressure and increased permeability of the capillaries, due to a combination of one or more of the factors of cold, pain, hæmorrhage, and toxæmia at work in an exhausted system. KEITH made available a new series of data—namely, the actual records of blood and plasma volumes. The old idea of the pooling of blood in the splanchnic area had already been abandoned by the Béthune

[1] N. M. Keith: Blood-Volume Changes in Wound Shock and Primary Hæmorrhage. Special Report Series No. 27. Medical Research Committee. H.M. Stationery Office. Price 9d.

group of investigators, but beyond observations on concentration of the blood no new facts then emerged. KEITH used the vital red method of measuring the blood volume direct, introduced by him in 1915 [2] and used by ROBERTSON and BOCK in a parallel investigation.[3] Since vital red does not yet appear in the physiology text-books it may be well to interpose that it is a dye of the triphenylmethane series, non-toxic and readily sterilised. Ten c.cm. or so of a 1·5 per cent. solution injected into a vein mixes uniformly with the circulating blood within five minutes, staining the plasma, so that a determination of the tint of a withdrawn sample enables the total blood volume to be calculated. On these simple colorimetric lines the diminished blood volume in soldiers suffering from wound shock was found to bear definite relationship to the severity of the patient's clinical condition. In the 29 cases studied the estimated blood volume ranged from 52 to 85 per cent. of the normal, while the plasma was correspondingly reduced to 62–90 per cent. In order to determine the part played by hæmorrhage in the deficiency of blood in the circulation observations were made on donors after supplying blood for transfusion. Withdrawal of quantities up to 800 c.cm. was followed by a rapid return of the blood volume to its original level. This level was sometimes reached within an hour, and occasionally the compensatory process persisted until an actual increase in blood volume resulted. When, however, the loss of blood is excessive, or when severe trauma is present, a shock-like condition follows which is distinguished by a failure of the normal process of rapid restoration. Shock may be accompanied by a fall in the circulating blood volume even without hæmorrhage. From a clinical study, combined with blood-volume observations, cases were divided into three groups:—

Group I.—The less severe cases, without distressing symptoms, with a pulse-rate of 90–110, a systolic blood pressure above 95 mm. Hg, and the blood volume not reduced below 75 per cent. of the normal.

Group II.—Into this class fall the serious cases, where the pulse-rate is 120–140, the systolic pressure below 90 mm. Hg, and the total blood volume between 65 and 75 per cent. of the normal.

Group III.—The men dangerously ill, with imperceptible pulse, a systolic pressure below 60 mm. Hg, a heart-rate of 120–160, and a blood volume below 65 per cent. (frequently 50–60 per cent.) of the normal.

In this third group, when the low pressure has continued for more than a brief period, recovery is almost impossible. The intracellular oxygenation of the tissues, including the sensitive cortical nerve cells, has been interfered with, and the damage cannot then be repaired even by transfusing whole blood. But KEITH reports the case of a soldier who had sustained an extensive comminuted fracture of the femur without external wound, in whom blood volume was reduced to 64 per cent. of the normal, pulse-rate 120, and maximum blood pressure 70 mm. Hg, but in whom, under warmth and fluids by the mouth, the pulse slowed, blood pressure rose, and the blood volume increased 400 c.cm. by the next day.

These observations should be read in conjunction with Mr. E. M. COWELL'S instructive Arris and Gale lecture on the Initiation of Wound Shock, which we print in our current issue. Mr. COWELL'S work is based upon blood pressure observations made over a period of three years at various points in the firing line, and often actually in the front trench. Some of these observations have been recorded in an early report [4] of the special investigation committee already mentioned. Criticism has been levelled against the preponderance in this report of clinical data over practical deductions for treatment. But Mr. COWELL very rightly points out that once the knowledge of wound shock is brought on to a sound clinical and pathological basis the application of therapeutic principles will follow as a matter of course. His summary of recent investigations focusses very convincingly the varied sources of new knowledge on to a screen where their practical bearing can be clearly seen. It is now established that in cases of severe wound shock the infusion of normal or even hypertonic saline has but a momentary effect [5] on the circulation. In uncomplicated cases, too, sodium bicarbonate solution gives no better results. Transfusion of blood, or its substitute BAYLISS'S gum saline solution, gives a more lasting rise in blood pressure, since the added fluid remains within the vessels. In KEITH'S experience the results of gum and blood were practically identical, and the success or failure of either depended largely upon whether the blood volume was sufficiently restored after their injection. The subcutaneous route for fluid administration is useless, because of the sluggish peripheral circulation and consequent slow absorption. The futility of relying on any of the numerous drugs commonly recommended to raise the blood pressure is emphasised by Mr. COWELL and will readily be understood in the light of KEITH'S work. These are important and fruitful deductions, and their application to the surgical shock of civilian practice should not tarry.

[2] N. M. Keith, L. G. Rowntree, and J. T. Geraghty, Arch. Int. Med., Chicago, October, 1915.

[3] O. H. Robertson and A. V. Bock: Memorandum on Blood Volume after Hæmorrhage, No. 6. Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions.

[4] E. M. Cowell: Investigation of the Nature and Treatment of Wound Shock and Allied Conditions, No. 2, same reports.

[5] J. Fraser and E. M. Cowell: No. 2 same reports.

The North-Eastern Railway Strike and Eyesight Tests.

LAST week the locomotive men and the firemen at Carlisle objected to the eyesight test laid down by the North-Eastern Railway Company, and came out on strike as a protest. The strike that ensued crippled all the industries on the North-East coast, the price of all food has risen, and the transport of passengers has been restricted to those who were able to hire motor-cars or aeroplanes. The National Union of Railwaymen negotiated with the North-Eastern Railway Company, and it is understood that they were united on one point—that the Board of Trade should speedily set up a national eyesight test. The strike has ended on this understanding. Hitherto, unfortunately, no standard of vision has been prescribed for the various railway employees; it rests with each company to make and enforce such regulations as they may consider necessary. As the safety of the travelling public is involved, this is clearly a matter for a Government department to arrange. The nature of the tests is for ophthalmic experts to decide, after being given every facility by the railway companies to learn the special visual requirements of the service. It is necessary to point out that the standard vision of 6/6 (or standard form sense) is by no means always associated with a good light sense, and for an engine-driver it is absolutely essential that he should be able to detect the signal lights readily

on a dark night; indeed, this is much more necessary than a standard form sense. In a good light a candidate may pass all the usual tests with Snellen's types and the colour tests with Holmgren's wools easily, but he might fail deplorably if the light were dim. The lantern test with the necessary coloured glasses seems to be the best colour test for locomotive men and for sailors, but it would appear that more attention should be devoted to the examination of light sense.

The promise of the President of the Board of Trade, Sir AUCKLAND GEDDES, that a national eyesight test for railwaymen shall be established within a month comes none too soon. Indeed, it is regrettable that such a test was not established long ago, instead of leaving a difficult matter to be decided separately by each railway company, with the result of the dissatisfaction recently manifested on the North-Eastern Railway. In the case of the Mercantile Marine, in which similar dissatisfaction used to exist, a Departmental Committee was set up by the Board of Trade in 1912 and its recommendations for a national test were adopted, with results that are said to be satisfactory. On this committee two ophthalmologists held seats, and it is essential that in deciding on the railway tests also, ophthalmologists should be brought into consultation. One of the most important tests is that for colour vision. As has been proved by Dr. F. W. EDRIDGE-GREEN, the old Holmgren wool test is both inefficient and dangerous in that it rejects some who ought to be passed, while, on the other hand, a large number will pass it easily whose future employment is dangerous. The wool test has now been replaced by most, if not all, of the railway companies by some form of lantern test. This should be made compulsory, and no lantern should be used which has not means for regulating the luminosity of the lights shown, as otherwise a man who cannot distinguish in a fog between a red and a green light might be passed. The degree of visual acuity necessary for engine-drivers and firemen is a matter that certainly requires a uniform settlement. On one railway the present standard is 6/12 in the better eye, 6/18 in the worse, without glasses. Is 6/12 good enough? Is not 6/18 an unnecessarily high standard for the worse eye? A man with 6/6 vision in one eye and 6/60 only in the other would certainly have better vision with the two eyes than one with 6/12 and 6/18 respectively. The only disadvantage that the former might be under would be the possibility of getting a spark from the engine in his better eye. The question of the employment of spectacles should be answered, and a rough but efficient test for the visual fields should be established to exclude any with such disease as retinitis pigmentosa, in which central vision may remain good till a late period.

The detection of tobacco amblyopia is a matter of very great importance at the present time, when this disease is more prevalent than formerly. No man should enter the railway service without being told the facts as to tobacco blindness and the importance of taking early advice in case of gradual diminution of vision, which will often save him from the necessity of having to throw up his job. As toxic amblyopia is fairly frequent even in those who smoke with moderation, and as its characteristic symptom is the early onset of a macular scotoma for green and red, it would seem necessary for engine-drivers and watchmen to be tested for this complaint every six months or so, and locomotive firemen at least every year. When recognised early, recovery may be almost guaranteed in eight or ten weeks, if the required treatment is duly carried out.

The Emergence of the Health Visitor.

THREE classes of women have come to be very closely associated with the medical practitioner in his work as indispensable helpmates, whether on the remedial or preventive side. In order of emergence these are, of course, the midwife—whose history goes back into the unknown; the nurse—whose founder, in the modern sense of the title, was FLORENCE NIGHTINGALE; and the health visitor—who scarcely existed before the London County Council Act of 1908. The nurse's work is purely remedial, to her both patient and doctor alike turn in sickness; but medicine is becoming increasingly preventive, and unless specially trained in the mechanism of health the nurse may be as inadvertently dangerous to the well child as she is mercifully helpful to the sick one. The midwife's habitat is normal physiological function, and the Board which controls her strictly defines the variations from the normal which are her concern. The health visitor arose for the purpose of advising on the proper nurture, care, and management of young children, of promoting cleanliness as the basis of health, and of carrying out (in the words of the Act of 1908) such other analogous duties as might be assigned to her. No one then could foresee to what extent these analogous duties might grow in ten years' time or be expected to devise in advance the training best suited to meet them. The Local Government Board at that time regarded the full nursing certificate or the diploma of the Central Midwives Board as satisfactory evidence of qualification. Time has not justified this claim, and the most successful health visiting is now found to be done by women of good education with some previous training in social science. To define and promote the best type of training for the health visitor has for some time been an objective of the National Association for the Prevention of Infant Mortality, and the scheme for training just issued as Circular 4 (M. and C.W. 10) by the Ministry of Health may be regarded as the fruition of their labours. At the same time appear the draft regulations (Cmd. 255, price 1*d.*) of the Board of Education, laying down the conditions under which in future grants will be made in aid of health visiting. Briefly, a good preliminary education and a course of two years will be required of candidates without previous special training, one year to be devoted to theory and one to practice. In the case of fully trained nurses, previous health visitors, or those holding a university degree or its equivalent, one year's training may be remitted. A certificate will be granted after examination, and subsequent to a certain date, of which notice will be given, no uncertificated appointment of health visitor may be made by any local authority. Further details will be found in the documents to which a reference has been given. Restrictive in form only, the regulations are a charter for the approved health visitor which, by protecting her from unqualified competition, will afford a much needed stimulus to the supply of the better class of visitor. The Ministry of Health was bound to protect in this way one of its principal agents in health work, and has done well in making this reform its first public action.

Annotations.

"Ne quid nimis."

BETTER INSURANCE PRACTICE.

THE Special Conference of Representatives of Local Medical and Panel Committees, convened in London on July 17th and 18th by the Insurance Acts Committee of the British Medical Association, was chiefly concerned with the conditions of service under the National Health Insurance Acts and with possible extensions of this service. Any discussion of the rate of remuneration of the panel practitioner for his services was expressly ruled out, the determining of the proper amount of the capitation fee per insured person being left for a future occasion. The basis of discussion was the long and closely reasoned report of 112 paragraphs issued by the Medical Department of the Association in May last for the consideration of panel committees and individually to every member of the medical profession, as well as the memorandum of discussions convened by the Insurance Commissioners, to which allusion was made in a leading article in our columns on June 14th. A summary of the report and its recommendations appears on p. 169 of the present issue. Report and memorandum together cover the whole field of insurance practice, and it speaks volumes for the foresight and dialectic skill with which they were drawn up that no considerable principle contained in them, and little even of detail, were overturned by a conference consisting of individuals deeply concerned to make the best of both the present and the future. Acceptance of an amendment standing in the name of Stockport opposing the limitation of individual panels of insured persons to 3000 was the nearest approach to an adverse vote. This amendment was carried by a small majority, but with the proviso, emanating from the London representatives, that the Panel Committee must accept the unpleasant duty of adjudicating the efficiency of any practitioner exceeding this limit when called upon to do so by an insurance committee. The conference set its face sternly against discouragement of large panels by any lowering of the capitation fee, holding that such a suggestion of reduction on taking a quantity was derogatory to the responsible and honourable character of panel practice. No one, however, had a word of condonation for the single-handed practitioners alleged to have more than 6000 patients on their lists. Necessitated, possibly, by war emergency such ill-directed ambition can hardly long survive the pressure of public opinion.

The question of the precise amount of the capitation fee being thus excluded, discussion centred round the provision of an adequate service under conditions agreeable and convenient alike to doctor and patient, assuming that—its scope being known—such service would be adequately remunerated by the Ministry of Health. In his opening address Dr. H. B. Brackenbury cited a few instances in which panel practice had recently not shown amenities to the insured person. It was difficult, he said, for the panel patient to obtain the administration of an anæsthetic when required for a minor operation, in certain areas he might have to wait in a queue to obtain advice and treatment at all; and if doubt should arise as to his being a panel patient, medical assistance might be sought unavailingly in case of serious emergency. Panel practitioners are, we feel sure, as anxious as the Government and the public to obtain a medical service where these things do not occur. On the practitioner's side there is a widespread feeling, amounting to a sense of soreness, that certain special services which are the patient's right under the Insurance Acts are nevertheless outside the range of general practitioner treatment, and should not be demanded of him without special remuneration. Such services include, for instance, the administration of general anæsthetics, attendance at miscarriages, and possibly the treatment of fractures and dislocations, and visits paid at night. Existing regulations admit of these services being made a prior charge on the local medical fund. If this fund itself is sufficient—i.e., if the capitation fee is large enough—it is clear that a first charge on the general fund is as favourable a form of remuneration for special services as a special fund created for the purpose. No one contended that Parliament was likely to sanction an unlimited fund for this purpose, but the Stockport representative was able to show by actual figures that the amount of these special services rendered by practitioners in his district was strictly proportional to the special remuneration available, and not to the demand for such services. Abstention from service where the demands are demonstrably unreasonable—which is not fairly to be called shirking, though the term is thus applied—cannot be regarded as an inherent sin of insurance practice; and the view expressed in the report of the Insurance Acts Committee finally prevailed, although by a hairsbreadth. Panel practice, it will be seen by this report, will not have the additional complication of special pools for special purposes. Thus many important matters seem to have been settled, but the real struggle will come with the fixing of the new capitation fee.

THE CAIRO SCHOOL OF MEDICINE.

THE winter session of the School of Medicine at Cairo, under the Egyptian Ministry of Education, begins on Oct. 4th, and it is the intention of the Ministry to make the school at this crisis in the development of Egypt worthy of its great historical and ethnological position. The school was inspired originally by French surgeons of the time of Napoleon, and has occupied its present site since 1837. The existing hospital of 600 beds is housed in a building entirely inadequate for its purpose, and the school itself has to refuse two-thirds of its yearly average of 150 applicants, but the enlargement and remodelling of both are under contemplation by the Government of Egypt in association with the proposed foundation of a University. But the Egyptian Educational Mission is not willing to let the proper development of the school await any extensive scheme of rebuilding, and the all-important matter of an adequate teaching staff is being handled forthwith. Reference to our advertisement columns will show a number of vacant posts for which the combined annual pay is over £10,000. The Egyptian students have been out on strike since March 9th last, and there is a strong feeling amongst them that the staff should be recruited from men of Egyptian nationality so far as this is possible. For the present, however, there are no Egyptians with the necessary qualifications. The whole-time pro-

fessorship of surgery is an innovation and designed to attract someone who is keen on teaching and research. The professor of pharmacology will have hospital beds at his disposal and a free field for research in the treatment of Egyptian diseases, and occupants of these chairs will presumably become professors in the faculty of medicine when the University takes shape. The lecturer on pathology will have a specially attractive field of work open to him, for many pathological problems still await solution in Egypt. The lectureships are designed to encourage research among Egyptians, some of whom are already being trained in England. But we are informed that none of the appointments are earmarked for any local or other candidate. The selection will be made, in the first instance, by small expert boards in England, the final selection taking place in Egypt on the recommendations of these boards. We wish every success to this practical effort for placing medicine on a substantial foundation in Cairo.

THE AFTER-HISTORY OF WAR NEPHRITIS.

Merklen and Desclaux[1] examined 26 men who had been temporarily discharged from the Army for chronic nephritis one year previously, and summarised their observations as follows: 1. Six men had no albuminuria nor any signs of renal or cardiac disturbance. There was no rise of blood pressure, and the heart was of normal size on radioscopic examination. They might therefore be regarded provisionally as cured. 2. Three men showed cardio-vascular symptoms only, such as an increase in size of the left ventricle, accentuation of the second aortic sound, a high blood pressure, and palpitation. 3. Seventeen cases, or two-thirds of the total, showed various symptoms of chronic nephritis, and albuminuria was present in every case. Though it is impossible to form a general prognosis in nephritis owing to the variable character of the affection, the writers feel justified in concluding that at the end of a year the majority of men who have been discharged from the Army for nephritis will still present symptoms of the condition.

AN ANTHROPOMETRIC SURVEY.

THE data obtained by the late Ministry of National Service when examining recruits in regard to their fitness for a soldier's life are in the possession of the Minister of Pensions and, in reply to a deputation from the British Association, Colonel A. L. A. Webb, Director of Medical Services, stated on July 18th that the various regional reports had been arranged and would shortly be ready for publication. Measurements, such as height, body-weight, and chest perimeter, in relation to age and occupation, have great objective value, while other data are more or less vitiated by the personal equation of the recorder. Many attempts have been made to obtain simple criteria of working ability. As long ago as 1846 Mr. John Hutchinson read before the Royal Medical and Chirurgical Society a paper, fully reported in our columns at the time, dealing with a method of detection of disease by the spirometer. This engine long fell out of repute, but recently a definite minimum standard of vital capacity was set up as a condition of admission to the Air Force, and Professor Georges Dreyer laid stress upon this measurement in a paper read before an Inter-Allied Sanitary Congress of Aeronautics held at Rome in February last. A single observation of certain anatomical and physiological data, carefully made and recorded, may have value when dealing with the population as a whole, but how much greater would be the value of continuous exact records, such as are now within the grasp of the Ministry of Health. The policy of the Insurance Commissioners has been to demand from its medical staff a number of entries so vast as to alienate most panel practitioners for all time from statistical method. These entries are recalled at the end of each year, thus rendering them unavailable for further reference. A tithe of this labour spent on a continuous record card would have produced results far exceeding in value those of the National Service inquiry. The panel conference, which we deal with elsewhere, had something of this possibility laid before it last week.

[1] Bull. et Mém. Soc. Méd. de Hôp. de Paris, 1919, xliii., 434-7.

THE CEREBRAL COMPLICATIONS OF MUMPS.

THOUGH a typically harmless disease, mumps may rarely be attended by serious and even fatal complications. In the Index Catalogue of the Surgeon-General's Library six deaths from mumps are recorded. Death is probably always due to cerebral complications. About 150 cases of cerebral complications have been reported. In the *Archives of Internal Medicine* for June Lieutenant R. L. Haden, U.S. Army, has published nine cases which were observed at Camp Lee, Va., U.S.A., among 476 cases of mumps, and he has reviewed the literature of the subject. The nature of the cerebral complications has been much discussed. Before the advent of lumbar puncture it was considered as meningismus, but with demonstration of pleocytosis of the spinal fluid it was looked on as meningitis. In simple mumps, according to Dopter, the cerebro-spinal fluid is normal. Many things point to the conclusion that the lesion is an encephalitis and not simply a meningitis. In most cases the cerebral symptoms are out of all proportion to the meningeal reaction, as shown by the condition of the cerebro-spinal fluid. The common symptoms are high fever, headache, nausea, and vomiting. Usually there is only slight rigidity of the neck and Kernig's sign is not well marked. Numerous cases of involvement of the cerebrum alone are on record. In these there are no definite meningeal signs, and the cerebro-spinal fluid is normal. Among the symptoms observed in 31 cases reported by Acker were unilateral convulsions, monoplegia, hemiplegia, aphasia, disturbances of speech, psychoses, disturbances of sensation, and stupor These point to affection of the brain substance. Other symptoms, such as bradycardia, headache, vomiting, and optic neuritis are probably due to intracranial pressure. The few necropsies recorded have shown congestion of the brain with only serous meningitis. In the nine cases reported by Lieutenant Haden the symptom-complex was fairly uniform. Usually as the parotitis was subsiding the temperature rose, with little change in the pulse-rate, severe headache, nausea, and vomiting. Often the patient had orchitis. On examination he was dull, answered questions slowly, showed slight stiffness of the neck, a suggestion of Kernig's sign, and variable reflexes. Lumbar puncture yielded clear fluid under increased pressure with lymphocytoses. In a few cases increased pressure was the only abnormality. Smears and cultures were made from the fluid in all cases, but in only one were organisms (Gram-positive cocci) found. Such cocci have been described by several observers as the organisms causing the disease, although a filterable

virus has also been suggested. The fluid in this case was turbid. Lumbar puncture proved effectual therapeutically. The temperature usually fell quickly to normal and the headache was relieved. The following case may be taken as typical. A wagoner, aged 21 years, was admitted to hospital on Feb. 3rd, 1919, complaining of headache, swelling of the neck, and occasional nausea. Three weeks ago he first noticed the swelling. On admission the right submaxillary glands were swollen, the temperature and pulse were normal. On Feb. 5th the left parotid became swollen, and on the 9th bilateral orchitis was noted. On the 10th the patient became very dull and suffered from headache and vomiting. The temperature was 105° F. and pulse 180. On the 11th he was very drowsy and still vomiting, There was definite stiffness of the neck. The knee-jerks were not obtainable. Kernig's sign was positive and Babinski's negative. Lumbar puncture yielded clear fluid under increased pressure, and the patient's condition immediately improved. On the 13th the pulse was only 48 and the temperature subnormal. He said that he could not see well, and during the night became delirious. On the 14th he was stuporous with the head retracted; the pupils reacted sluggishly. The temperature was 97° and pulse 44. The deep reflexes could not be elicited. Next day he was much improved. Rapid recovery followed. The following were the laboratory findings: Feb. 12th, leucocyte count, 6200. Differential count: small mononuclears, 48 per cent.; large mononuclears, 6 per cent.; eosinophils, 5 per cent.; polymorphonuclears, 41 per cent. Feb. 11th, cerebro-spinal fluid contained 10 cells per c.mm., all mononuclears. Feb. 14th, the fluid contained only 5 cells per c.mm. Sugar was present on both occasions.

A FLOATING SCHOOL OF TROPICAL MEDICINE.

To most of us the stimulus of encouragement and criticism is necessary to bring forth our best, and the foregathering of workers on kindred subjects at the regular meetings of learned societies has often acted like the piece of leaven in the amorphous dough or, as we should now say, as a catalyst in a mass reaction. This stimulus has been wanting to most workers in tropical medicine, cut off for months or years from their friends and critics, and, in addition, borne down by conditions of great bodily discomfort. Small wonder that under these circumstances the best work has not always been done, although the history of tropical medicine is punctuated with individual brilliant successes. Nine years ago, in a letter to our own columns,[1] Dr. Andrew Balfour, struck with the usefulness of the Wellcome floating laboratory on the Nile, suggested the extension of the marine floating laboratory for the purpose of visiting any desired portion of the globe and bringing back a store of material for museum and teaching purposes. By such a perpetual *Challenger* expedition diseases could be studied on the spot, parasites observed in a living state, and tutorial classes given to successive crews of students desirous of obtaining a nearer insight into the fascinating problems of disease and its prevention in hot countries. Dr. Balfour's suggestion passed unheeded, and it remained for Dr. Louis Sambon, in a lecture delivered before the Royal Society of Medicine on June 14th last, by arrangement with the West India Committee, to develop the theme of bringing students periodically into the tropics by means of a floating school. The islands of the Lesser Antilles, which he had recently visited, were ravaged each by its particular breed of epidemic, and nothing would coördinate the isolated efforts of medical officers on these lonely isles so thoroughly as a regular circulation of expert advice and help. He advocated a development on international lines, having already received encouragement from the French and Italian Governments. The idea thus timely set forth was not allowed to drop and came up for discussion at a private meeting held under the chairmanship of Sir Humphry Rolleston on Thursday, July 10th, at the same place. Here Dr. Balfour set out the views summarised above, adding the further claim of a floating laboratory as a link between the Dominions and the Mother Country. Sir David Bruce and Dr. G. C. Low, among others, doubted the feasibility of the floating school as a substantial agent of research, the latter pointing out that sleeping sickness and kala-azar at all events could not be studied on the littoral. The extended establishment of local shore laboratories appealed to the majority of those present for the purpose of actual research work, neither nostalgia nor rolling and pitching apparatus being specially conducive to the desirable mental detachment. Sir Thomas Horder voiced the general consensus in finding the floating school an attractive idea for teaching purposes, adding that finance should not be an impediment if the ruling authorities were satisfied of the practicable character of the proposal. A committee was appointed, with Dr. Balfour as chairman, and Dr. Low, Dr. R. T. Leiper, and Dr. Sambon as secretaries, to inquire into the question in all its aspects. We are inclined to agree with Dr. Balfour, who has from first to last been the moving spirit in the proposal, that the cost of such a floating school might reasonably be regarded by Parliament and public in the same light as polar expeditions. The adventures and prizes are much the same, the gain, indeed, presumably much greater: the difference consists chiefly in the substitution of pith helmets and mosquito nets for fur caps and mocassins. Within a generation, if ankylostomiasis and pellagra are not then extinct, we doubt not that the floating school will be a routine method of education and preventive study.

[1] THE LANCET, 1910, ii., 55.

CRIME AND RESPONSIBILITY.

THAT "insanity is not an absolute defence," and that what is called the defence of insanity to the charge of murder requires, for success, not merely the proof of insanity, but that of insanity of such a nature as to carry with it irresponsibility to the law, is clearly shown by Section 2 (1) of the Trial of Lunatics Act, 1883, in which the following form of words is employed: "insane *so as not to be responsible according to law* for his actions at the time the act was done." Formerly, many judges refused in court to allow, when in murder cases the "defence of insanity" was raised, evidence to be given by experts as to the existence of insanity in the broad, or medical, sense; but nowadays practically every judge allows, as did Sir Charles Darling in the recent case of Perry, testimony of such nature to be given before attention is directed to the more stringent issue of legal responsibility. It is generally by the application of the M'Naughton Rules that this question of responsibility is decided, but there are not wanting judges who

will direct, in accordance with the view of the late Sir James Stephen, that responsibility may be abrogated by loss of control, if arising from mental disease or infirmity, and not from the accused person's own conduct. Such elasticity is permissible in practice because, after all, the M'Naughton Rules are not part of the statute law which is applicable to civilians. In respect of military law it is otherwise. Reference to the "Manual of Military Law" (chap. vii., par. 9) will satisfy those to whom the point is unfamiliar that, in the case of a member of His Majesty's Army under trial by court-martial, the question of responsibility, if a defence of insanity be raised, can only be resolved by a rigid and undeviating application of the M'Naughton Rules. The effect of this is that when, either in the course of trial or afterwards, medical testimony is adduced, or a Medical Board is constituted to inquire into, as is said, the state of mind of the accused, the medical witnesses are required to testify, or the Board to direct inquiries, not to the general question of the accused's sanity or insanity at the time of inquiry or anteriorly, but to the specific questions implied in the Rules. All other considerations are irrelevant; the problem is simply whether or no it can be said, at a certain date, that a certain person was, at an anterior date, in such a state of mind that he did not know the nature and quality of his act or that what he was doing was wrong. There is no room for elasticity of interpretation; and the question of impulsion, or lack of control, cannot be raised. That this is a perfectly fair representation of the procedure in vogue is known at any rate to some of those who have lately served overseas; and official confirmation is afforded by the answer given by Mr. Macpherson, in the House of Commons on April 11th, 1918, to a question put to him some time previously by Sir William Job Collins.[1] No great effort is required, then, to realise how readily the specific instructions addressed to a Medical Board may determine the infliction of the last penalty upon an officer or man who, under the influence of temporary mental disorganisation produced by physical agencies, commits the supreme military offence of "desertion in the face of the enemy," or of apparent cowardice. The military necessity for such stringency is not a matter on which we express any opinion; but the facts are as stated. The ultimate consequence to Perry, alias Beckett, of his acts has been his execution; but he enjoyed more generous opportunity under the English common law than would have been his had he left a post of military duty under that kind of mental compulsion best known to those who have experienced—or feared it.

THE SUPPLY OF DRUGS DURING THE WAR.

A VERY interesting Memorandum was issued from His Majesty's Stationery Office this week (Cmd. 183) on the special measures taken by the National Health Insurance Commission (England) in relation to the supply of drugs and other medical stores during the war. It shows how the critical position in regard to the supply of drugs created by the sudden and unexpected outbreak of war was dealt with. Immediate steps had to be taken to conserve existing stocks and to encourage the production in this country of drugs for the supply of which we had hitherto been wholly or mainly dependent upon enemy countries. Conspicuous service was rendered by the Royal Society, while the energy and enterprise shown by the chemical manufacturers of the country will lead to permanent results of the utmost importance to the medical needs of the community. The requirements of the Forces and of the civil population were met after a little inevitable shortage experienced at the beginning. The Chairman of the Committee, Mr. Waldorf Astor, concludes his prefatory note by saying that the fine chemical industry has been very greatly developed and extended, and that this country is now capable of manufacturing on a large scale all the important medicinal chemicals which before the war were practically a German monopoly. Thus ground has been regained which should, in point of fact, never have been lost. The Memorandum, opportunely enough, provides a key to many of the scientific products now being exhibited by the British Science Guild at the Central Hall, Westminster.

[1] THE LANCET, 1918, i., 587.

HUGH OWEN THOMAS.

THE Medical Institution of Liverpool have organised a scheme for the perpetuation of the memory of Hugh Owen Thomas, a pioneer worker in orthopædic surgery. Hugh Owen Thomas was born in 1834 and studied medicine at Edinburgh in the days of Goodsir, Syme, Spence, and Simpson, with Turner as demonstrator of anatomy. Later he entered University College, London, and qualified as a Member of the Royal College of Surgeons of England in 1857. On returning to Liverpool he took up surgical work in connexion with workmen's societies and at the docks, his practice being almost entirely concerned with accidents, deformities, and joint diseases. He instituted a free clinic at his surgery on Sundays—a recognised practice before the establishment of out-patient departments at the hospitals—and devised and made his own splints, employing a blacksmith and various artisans in their construction. Later he himself became an expert metal-worker, laying great stress on the careful fitting of all splints and their correction from time to time under his own supervision. In 1871 he described an ingenious method of wiring fractures of the lower jaw, and soon afterwards published an important work on the treatment of the diseases of the hip, knee, and ankle joints. The appliances which he invented have not been improved upon in principle, and in joint diseases his splints enable sufferers to enjoy fresh air and exercise, as they did upon their invention half a century ago. He was without doubt one of the founders of modern orthopædic surgery, and the appeal for funds to endow a worthy memorial to his work in the city where his whole life was spent should certainly meet with a generous response. Subscriptions should be sent to Major C. Thurstan Holland, at the Medical Institution of Liverpool, and crossed "Hugh Owen Thomas Memorial."

THE House and Library of the Royal Society of Medicine will be closed during the whole of August for repairs and cleaning.

A DINNER will be held in London, at a date to be arranged, for all R.A.M.C. (T.F.) officers; will those who are interested and would be likely to attend kindly communicate with Lieutenant-Colonel A. R. Henchley, D.S.O., R.A.M.C. (T.F.), care of Holt and Co., 44, Charing Cross. It would facilitate matters if London officers would say wh ther they would kindly serve on the committee.

THE AMERICAN HOSPITAL FOR GREAT BRITAIN.

THE American Hospital for Great Britain, to which allusion has been made frequently in our columns, was formally founded on Thursday, July 17th, at a meeting at the House of the Royal Society of Medicine.

Lord READING, the Lord Chief Justice of England, presided over the meeting of supporters of the hospital, and in a brief but happily worded speech laid stress on the coöperation that had existed between Americans and British during the later stages of the war. He pointed out that from the very beginning of the war a certain number of American medical men had worked in British hospitals, and that out of the cordial relations thus established had arisen the idea that there should be founded an American hospital in London both for the reception of sick Americans, and to act as a centre for post-graduate work in London among Americans who hitherto have pursued such studies mainly in Berlin or Vienna.

Mr. PHILIP FRANKLIN, who has been a moving spirit in the foundation of the American Hospital for Great Britain, then made a statement in which he pointed out the need for an American Hospital in London, which the American medical man could make his headquarters when engaged in organised post-graduate work.

In the absence of the American Ambassador, Mr. NEWTON CRANE moved, and Sir W. ARBUTHNOT LANE seconded, the following resolution:—

"That, in commemoration of the coöperation of the medical men of the United States and of Great Britain during the European War, and to strengthen the friendship existing between the two nations, the American Hospital for Great Britain be, and is hereby, founded for the medical and surgical treatment of patients of all classes, irrespective of creed or nationality, and for the promotion of scientific study and research."

Sir HUMPHRY ROLLESTON, President of the Royal Society of Medicine, then moved a resolution that a governing body should be constituted. Sir JOHN BLAND-SUTTON seconded and paid an eloquent tribute to the value of the work done by lay boards in administration hospitals.

The following were constituted the original members of the council:—

His Excellency the American Ambassador.
Mr. Walter Blackman.
,, George M. Cassatt.
,, R. Newton Crane.
,, Wilson Cross.
,, James E. Dunning.
,, J. Grant Forbes.
,, Philip Franklin.
,, Clarence Graff.
Mr. Robert Grant, jun.
,, James Benson Kennedy.
,, J. Blair MacAfee.
,, George A. Mower.
,, Francis E. Powell.
,, H. Gordon Selfridge.
,, Henry E. Stoner.
,, Lawrence L. Tweedy.
,, F. C. Van Duzer.
,, E. Bradner White.
,, Robert Skinner.

Mr. F. E. POWELL moved, and Mr. WALTER BLACKMAN seconded, a resolution, which was unanimously adopted, constituting the Medical Committees in Great Britain and in the United States, the following being the selected personnel:—

Of the Medical Committee in Great Britain:
Sir William Osler, Regius Professor of Medicine, University of Oxford.
Sir W. Arbuthnot Lane.
Sir Humphry Rolleston, President of the Royal Society of Medicine.
Sir John Bland-Sutton, Vice-President of the Royal College of Surgeons of England.
Mr. J. Y. W. MacAlister, Secretary of the Royal Society of Medicine.
Mr. Philip Franklin, Joint Honorary Secretary of the Fellowship of Medicine.
With power to add to their number.

Of the Medical Committee in the United States:
Dr. George W. Crile, of Cleveland, nominated by the American Academy of Science on International Relations.
Dr. W. J. Mayo, of Rochester, Minnesota.
Dr. Charles H. Mayo, of Rochester, Minnesota.
Dr. Albert J. Ochsner, of Chicago.
Dr. Rudolph Matas, of New Orleans.
Dr. Franklin Martin, of Chicago, nominated by the American Gynæcological Association.
With power to add to their number.

Mr. Philip Franklin was then unanimously appointed honorary secretary to the hospital, while it was left in the hands of a small subcommittee to invite the support of certain vice-presidents. The committee also decided to appoint legal, financial, and appeal committees. The meeting terminated with a cordial vote of thanks to the Royal Society of Medicine for its hospitality and assistance to the movement.

In replying, Sir HUMPHRY ROLLESTON wisely took the opportunity of pointing out that this movement was in no sense in rivalry to the existing post-graduate work in London, but would prove a source of support and inspiration of such efforts.

THE MINISTRY OF HEALTH:

ORGANISATION OF MEDICAL STAFF.

ON the establishment of the Ministry of Health the medical staffs of the Local Government Board and of the National Health Insurance Commission have been brought together to form the main portion of the medical staff of the Ministry, but on a newly organised system, and with considerable additional posts.

The Minister has appointed Sir George Newman, K.C.B., as Chief Medical Officer of the Ministry, with status corresponding to that of a secretary of the Ministry. By arrangement between the President of the Board of Education and the Minister, Sir George Newman retains his position as Chief Medical Officer of the Board of Education.

Five new posts of "Senior Medical Officer" have been established, with status corresponding to that of Assistant Secretary. To these the Minister has appointed the following:—

Dr. G. S. Buchanan, C.B.
Dr. Janet M. Campbell (who will also by arrangement with the President of the Board of Education act as Chief Woman Medical Adviser of that Board).
Dr. F. J. H. Coutts.
Dr. A. W. J. MacFadden, C.B.
Mr. J. Smith Whitaker (who will also act as Medical Adviser to the National Health Insurance Joint Committee).

The whole of the rest of the established medical staff of the Ministry will be in one grade, to be known as "Medical Officers." They will comprise the remainder of the existing medical staffs of the Local Government Board and of the Insurance Commission, with the addition of new officers still to be appointed as the additional services may require. The following appointments have so far been made:—

Dr. Irene Cecil Davy Eaton.
Mr. Major Greenwood (Medical Statistics).
Dr. Florence Barrie Lambert (Remedial Treatment).
Dr. Jane Holland Turnbull, C.B.E. (Obstetrics and Gynæcology).

Besides this regular staff, arrangements have been made whereby the Ministry may secure the services, from time to time, of specialists and others on a part-time basis; amongst these are included at present the following:—

Dr. Maurice Craig (Psychological Medicine).
Colonel L. W. Harrison, D.S.O. (Venereal Diseases).
Sir David Semple (Rabies).

Further appointments will be announced as they are made.

PORTSMOUTH AND SOUTH HANTS EYE AND EAR HOSPITAL.—At the annual meeting of this institution, held on July 14th, it was reported that overtures had been received from the Royal Portsmouth Hospital with a view to amalgamation, but that the committee had not felt justified in altering the present arrangements. The financial statement showed a small deficit of £148 on the year's working.

PRESENTATIONS TO MEDICAL MEN.—On the occasion of the closing of the Hart House V.A.D. Hospital, Burnham, Somerset, Dr. N. O'Dell Burns, the honorary medical officer in charge, was presented with a silver cigarette case as a mark of respect and esteem.—Dr. W. R. Newton Cole, St. Tudy, Cornwall, has been presented with a clock and an album containing the names of 300 subscribers, as a mark of respect and esteem, on the occasion of his retiring from active work after 37 years' residence in the village.

WOMAN IN INDUSTRY.

I. WOMAN'S ECONOMIC VALUE IN RELATION TO HEALTH.

THE ability of women to compete on equal terms with men in industry and the principle of "equal pay for equal work" is very fully discussed in the Report of the War Cabinet Committee on Women in Industry, which has lately been published. Dr. Janet Campbell deals with the Health of Women in Industry, and in her memorandum brings out important points with regard to men's and women's work which, although well-known to physiologists and students of industrial medicine, have, so far, not been given sufficient prominence in actual practice. No one has ever denied that a woman is handicapped on account of her potential motherhood, but this handicap is, as a rule, far greater than is necessary. Those who are engaged in looking after the health of girls employed in offices must have realised that much of the tribulation and inability to carry on which occur at the menstrual periods is avoidable, and is much increased by ignorance of the elements of hygiene and the laws of health. Decayed teeth are only too common among all classes of workers, the constipation of women is proverbial, digestive disturbances are not unusual, anæmia is essentially an ailment of girls and young women, and it is a well-known fact that girls and women often forego proper meals. All this tends to a lowered state of vitality, which is still more accentuated during menstruation.

Disadvantages of Women Workers as Compared with Men.

Only in very rare and exceptional cases is it possible to compare with any degree of fairness the ability, both physical and mental, of men and women. Their upbringing has been different and their training and development have been forced along different lines. Among the children of the poor the boys, during out-of-school hours, are given the open-air work to do, such as carrying messages, &c., whilst the girls are cooped up indoors helping with the domestic work. Teachers in secondary schools complain that it is impossible to send a girl up for a certain examination at the same age as a boy. She is usually about a year behind, not, as they say most definitely, on account of her lower mental capacity or of an even slightly lower grade of intelligence, but because she has no proper time for her home work and because, being engaged in household tasks, she comes to school with her brain more tired, her mind less receptive, and her memory less retentive. The same handicap follows her through life. If she is living at home and going out to work there are still household duties which she is expected to carry on, although nothing of the kind is expected from her brothers. In the poorer classes, as a mother of a family compelled to go out to work, it is still her duty to keep the home, cook the meals, and do the family washing. A dish for the dinner is unusual, as it means more washing up, so the mother spends her time going backwards and forwards from the fireplace to the table helping the rest of the family to food. She herself has for her dinner "whatever is left," and this occurs as a matter of course. There seems no doubt that less and poorer food, combined with domestic duties, has an extremely deleterious effect on women's work, and handicaps them to a very marked degree in competition with men for work and wages. Miss Anderson, in her evidence before the Committee, pointed out that "a limitation of hours was necessary in the national interest, in order to enable women with domestic responsibilities to carry on their home duties." Miss Martindale "showed that night-shifts, and especially permanent night-shifts, are particularly harmful to women with domestic responsibilities, as it is more difficult for them to obtain adequate sleep; they invariably do their own housework during the day and their rest is subject to continual interruptions; their work becomes inferior in quality and their health suffers." There are no doubt profound physiological differences between men and women, as Dr. Campbell insists, but there has been no proper evaluation of these differences, and until the question has been more fully elucidated there is no reason to conclude that women's handicaps are physiological and unalterable. A great difficulty arises in the case of the married woman who has a baby and who has to add to the family income. For the national welfare the baby should be breast-fed; for the family welfare the mother must go to work. It seems to us that the only way out of the difficulty is the institution of creches in connexion with the factories where nursing mothers are employed, which should be under the supervision of the doctor who is also in charge of the health of the mothers, and where time should be allowed every four hours for breast-feeding.

An Old Problem in a New Aspect.

These are some of the more obvious considerations that arise on a first survey of the report, but they lie at the root of the whole of social and industrial medicine. They are the justification for the call for more effective supervision and for energetic research into the causes of industrial fatigue and the methods of preventing disease directly or indirectly due to occupation. Employers of the more educated type of labour do already to some extent provide efficient supervision, preliminary medical examination, and medical advice. But such conditions as decayed teeth, unhealthy throats, and defective eyesight usually remain unrealised and untreated among employees of the poorer classes. In what follows the vast problem of industrial health from the woman's point of view is studied largely in Dr. Campbell's own words.

II. THE PERSONAL HEALTH OF THE WOMAN WORKER.

In her memorandum on the Health of Women in Industry, included in the Report of the War Cabinet Committee on Women in Industry, Dr. Janet Campbell points out that in considering the position of women in industry and their capacity and power of continuance to compete equally with men two essential principles can never be disregarded, namely: (1) the profound physiological differences between the man and the woman; and (2) the woman's potential function of motherhood and child-bearing. The woman's abdominal muscles are longer, and, as a rule, less well developed; they act under greater mechanical disabilities on account of the relatively greater length of the abdominal cavity, the greater area of the abdominal wall, and the larger size of the pelvic cavity. This natural weakness is not infrequently accentuated by habits of dress and by lack of proper use and training of the muscles. The effect of pregnancy, especially when repeated, is usually a further weakness and stretching of the abdominal walls, which result in a less effective support of the internal organs. The muscular system of the girl and young woman can be greatly developed by suitable nutrition and training, but, in this country at any rate, the smaller size of the bones, together with the mechanical disadvantages of the general build and an inherent physiological difference not to be overcome rapidly, if at all, by any method of upbringing, make it unlikely that women can become equal to men in physical strength, and suggest that uncontrolled competition between men and women in matters requiring considerable muscular energy is undesirable. The greater weight of the man is itself an advantage where heavy work is concerned, and the strength of his muscles and joints makes him less liable to instability or accident from sudden or violent jerks or strains.

Owing possibly to the greater fineness and delicacy of her skin and the greater deposit of adipose tissue, a woman usually reacts more quickly than a man to an unsatisfactory atmospheric environment, and particulasly to ill ventilation and high temperatures. She loses heat from the surface of the body less rapidly than the man, and therefore feels low temperatures less and high temperatures more.

There seems no reason to believe that the *special senses* of a woman (sight, hearing, touch, taste, smell) cannot be trained as highly as those of a man, though there may be certain differences in the two sexes. As regards the *central nervous system*, there is probably little difference, except as regards a woman's higher degree of emotional expression. Professor Sherrington stated that, judging by certain simple sensory tests, the young woman's delicacy of sensation is possibly less than the young man's, but the more complex the test the smaller the difference.

Maternity.

The function of maternity, even when potential only, necessarily imposes on the woman disabilities from the point of view of physical strength and efficiency. The structure of her body is framed with a view to pregnancy and childbirth, and is less well adapted to muscular exertion

than that of the man; she is further subject to periodical functional disturbances which tend to render her nervous and muscular energy somewhat unequal and varied. Interruption of employment due to childbearing and lactation is an economic handicap to the married woman; pregnancy places a considerable physiological strain upon the general metabolism which requires adequate physical compensation if the woman is to maintain her health and strength. She is also exposed during this period to various dangers, some of them chiefly physiological in origin, others due to more or less unsatisfactory treatment at the time of her confinement, but the results of which may persist as permanent disabilities and render her less fit for her ordinary occupation and less able to resist subsequent strain or fatigue.

Nutrition.

One of the primary requirements for healthy physiological development is satisfactory nutrition.

The habit of the woman is to consume less than the man even when ample food is available; this habit is far more marked among working-class women and girls, who are frequently not in a position to provide themselves with an adequate diet. The average wages earned by women before the war made it impossible for them to procure good and substantial food; their diet, besides being less in quantity, was less satisfactory in quality than the diet of men in their own position. It is a matter of common knowledge that the mothers of working-class families often suffer from an inadequate diet; when the wages are insufficient the needs of the father as bread-winner almost necessarily come first, those of the children next, the mother's last.

Fatigue, the true index of which is diminished capacity, results in reduced output, even before it is observed subjectively by the worker. Persistent fatigue, shown in reduced physical capacity, results in the loss of resistance to disease or an unsatisfactory environment, which are further reflected in returns of sickness, of broken time, and of the number of accidents recorded. Fatigue naturally occurs earlier in under-paid, under-fed persons; the secondary results of overstrain, including sickness, are most common and excessive among this class of worker, which is mainly comprised of women and girls. It is a frequent cause of complaint that women workers are worse time-keepers than men; omitting such reasons as domestic duties and temporary physiological incapacity, fatigue, whether giving rise to actual sickness or not, will inevitably tend to increase absence and unpunctuality. Accidents have been shown to be most common during the period of the day when fatigue is most pronounced and to be due, in some degree at any rate, to diminished capacity leading to inattention and carelessness.

Prolonged standing is a not uncommon cause of excessive fatigue in women. Women who have borne children are likely to suffer more from continual standing than unmarried girls, and are more apt to develop varicose veins, internal displacements, or other disabling conditions in consequence. In order to avoid unnecessary fatigue and conserve physical energy, it is important that suitable seats should be provided for women engaged in occupations involving constant standing, even if occasional advantage only can be taken of them.

Lifting *heavy weights* is another source of overstrain and possible injury. Women are less able to lift weights than men, but are usually better able to deal with small compact objects than with bulky articles of the same weight. Part of their natural disability can be overcome with training, and in certain factories selected women have shown themselves surprisingly competent in the handling of heavy weights.

Anæmia is present in greater or less degree in a very large number of working girls. It certainly reduces their efficiency, sometimes to a considerable extent, hinders their full physiological development, and may predispose to more serious diseases.

Overstrain also results in greatly reduced industrial efficiency. The over-tired woman performs her task at an excessive expenditure of nervous energy. If long continued, this results in a serious lowering of vitality and the power to resist disease (for example, tuberculosis, infectious diseases, &c.), it renders her less capable of performing maternal functions such as nursing her baby, and it prematurely wears her out and makes her an old woman long before her time. Overstrain may result from the nature of the work alone, but is far more likely to be associated with undue speeding up or competition with physically stronger workers of either sex.

Incidence of sickness.—The operation of the National Health Insurance Act revealed for the first time the remarkable incidence of minor and major sickness among girls and young women, an incidence which compared most unfavourably with the sickness rates for men. The report of the committee appointed to inquire into the alleged excessive claims in respect of sickness benefit contains important evidence in this connexion. This chronic ill-health among working women was ascribed to low wages resulting in badly prepared and insufficient food, and to conditions of employment, such as long hours, long standing, lack of fresh air, and long intervals without food.

Dr. Benjamin Moore, in an article on factory and workshop conditions and the prevalence of pulmonary phthisis, has pointed out[1] that after the thirtieth year there was a great preponderance of the disease among urban males which is not shared by urban females, no such disparity being observed between rural males and rural females. This is ascribed to the daily occupation—(1) the long-continued strain of work under unhealthy conditions, and (2) the infection of men (thus reduced in resisting power) by fellow workers actually at work alongside them while suffering from open phthisis. Since 1914 the mortality rate among urban women has shown a substantial increase. This, Dr. Stephenson thinks, may well be due to the introduction of many thousands of women into industrial life.

III. THE EFFECT OF INDUSTRIAL EMPLOYMENT ON MOTHERHOOD.

It is difficult to determine the effects of employment on the function of motherhood. As Dr. Campbell says, "It may be personal and physiological, but it is difficult to separate this from social and national welfare."

The direct result upon the reproductive system of the woman is probably largely negligible, except in the case of multiparous women engaged in heavy or fatiguing work. The influence of employment in causing an impairment of the general health and vitality is certainly, if indirectly, considerable. The effect of the increasing employment of women on the birth-rate has probably been to accelerate somewhat the steady decline which has been observed since 1876, and the figures relating to occupations in which married women's labour is common suggest that this result would become more pronounced if the proportion of employed married women was much increased. The influence of employment upon the infant mortality rate is not altogether clear. The industry associated with the highest infant mortality rate is mining, in which there is little employment of married women, but the housing and sanitation are notably inferior and the standard of general hygiene and domestic comfort is low. Almost as high infant mortality rates are associated with the pottery and textile industries, in which many married women are employed for long hours away from home. The regular employment of the mother necessarily deprives her infant of its natural food, which is the greatest safeguard to its healthy growth and development, and also of the careful and constant attention which is so necessary to its successful nurture. On the other hand, poverty or an insanitary environment may have an even more injurious effect than the mother's absence. This is borne out by the low infant mortality rates in 1916 and 1917, years during which a continually increasing number of married women was being employed. The infant mortality rate has shown its most rapid decline in the last decennium, during which industrial employment of women has increased. In 1899 the infant mortality rate for England and Wales was 163; in 1902 it was 133; in 1908, 120; in 1911, a year of heat and drought, it was 130, but dropped in the following year to 95. In 1915 it rose to 110, but in 1916 it was 91, the lowest recorded rate. In 1917 it again rose slightly to 97, but there has been no substantial interruption in the steady downward tendency. The chief direct causes of deaths amongst infants are: (1) premature birth, atrophy, marasmus, and congenital defect; (2) diarrhœa and enteritis; (3) bronchitis and pneumonia.

Among the various general influences which affect infant mortality, the most important would seem to be poverty,

[1] THE LANCET, Nov. 9th, 1918, p. 618.

bad housing and insanitation, the lack of education of the mother, and the occupation of the parents. Poverty and bad housing are often inseparable; ill-paid work and a low standard of domestic hygiene are usually, though not always, associated. A hand-fed baby is much less likely to thrive in such circumstances than in a well-to-do household.

Parental Occupation and its Effect on Infant Mortality.

With regard to the effect on the infant mortality rate of the occupation of the parents, it is shown that the mortality in the middle classes is only 61 per cent. of the total infant mortality of the country, which suggests that practically 40 per cent. of the mortality could be avoided if the health conditions of infant life in general could be approximated to those in the middle class. The observation is not a new one, for in the classic inquiry carried out by Sir John Simon and Dr. Greenhow for the old Board of Health, in the middle of the last century, into the sanitary state of the people of England, it was noted that one of the causes of the high rate of infant mortality then existing was the occupational differences among the inhabitants in certain large towns where women were greatly engaged in branches of industry away from home. In such circumstances the houses were usually ill-kept, and infants who should have been on the breast were improperly fed, starved, or quietened with opiates. After consideration of subsequent investigations in England and Scotland by other authorities, including the Home Office inspectors, Sir George Newman ("Infant Mortality," 1906) concludes that in towns where women are largely employed in factories, the disadvantages to the health and life of their infants are enormously increased on account of: (1) the injuries and diseases to which women and girls in factories are liable; (2) the strain and stress of long hours of hard work to the pregnant woman; and (3) the absence from home of the mother and the infant. The results of an investigation of Dr. J. Robertson, of Birmingham, carried out in two wards where the wages were low and the industrial employment of women was common, suggest that poverty was more injurious to infant life than the employment of the mother. Dr. G. Reid, medical officer of health for Staffordshire, in his report for 1910, shows that the infant mortality rate was greatest and had declined least in the five large towns in the county having the highest proportion of married and widowed women industrially employed. Industrial employment of women leads to the neglect of breast-feeding, and the infant may be left in the charge of an unskilled "minder" instead of being sent to a properly managed creche. As a result epidemic diarrhœa and nutritional disturbances are more common, the infant's chance of survival during the first years of its life are diminished, and its liability to subsequent weakness and debility are increased. The areas in which the infant mortality rate is highest are the mining and manufacturing districts. In the mining districts the cause is probably to be found in defective housing and sanitation, overcrowding, and the low standard of general hygiene. In the pottery and textile trades it is probably due to low wages and the handling by the mothers of a substance specifically dangerous to infant life—namely, lead.

Married women's labour must be regarded from various points of view: (1) the direct effect on the health of the mother while she is bearing or nursing a child; (2) the general effect on her health in view of her domestic responsibility and duties; and (3) the effect on her home and children.

Besides its effect on the birth-rate and on infant mortality, the employment of married women may react directly on the personal health of the expectant and nursing mother, and on her general physical strength at other times by imposing a double burden of factory labour and domestic duties, while lack of "mothering" may lead to the moral and physical injury of the children. Employment under suitable conditions is not in itself injurious to the pregnant woman, while the money thus earned may enable her to be properly fed—a matter of the highest importance. If the work causes undue fatigue or involves strain or violence it may give rise to general or local injury and lead to premature confinement or complications of pregnancy. Section 61 of the Factory and Workshops Act, 1901, provides that a woman shall not return to work within four weeks of giving birth to a child and is generally observed, because most women do not desire to return to work until at least a month, and usually longer, after their confinement. It would be undesirable to extend this period unless grants in aid were available to assist the mother.

Wages in Relation to Health.

The results of employment of women under war conditions have emphasised the important to health of the good food, clothing, and domestic comfort which can be obtained when the wages represent a reasonably adequate recompense for labour. They have also proved that properly nourished women have a much greater reserve of energy than they have usually been credited with, and that under suitable conditions they can properly and advantageously be employed upon more arduous occupations than has been considered desirable in the past, even when these involve considerable activity, physical strain, exposure to weather, &c. Light sedentary occupations are not necessarily healthy occupations. The commercial futility of unduly long hours of work and of overtime has been demonstrated repeatedly, together with the benefit to health and to output of shorter hours, of the abolition of work before breakfast, and of properly arranged spells and pauses. There is advantage to the employer as well as to the workpeople in the provision of factory canteens, well-equipped surgeries and rest-rooms, suitable arrangements for sanitation and hygiene, and, when necessitated by the nature of the work, of protective clothing.

Physical Strain on the Worker with a Family.

Dr. Campbell points out the great physical strain which is placed upon the woman who is industrially employed and also has a home and family to manage. This strain is often unrealised because the woman shoulders this heavy burden patiently as a matter of course and without complaint. That she is often surprisingly successful, though at the expense of her own youth and physical vigour, is no reason why the nation should be content to allow its mothers to wear themselves out in a life of colourless drudgery and a continual struggle with difficulties which frequently prove too great to be overcome, and of the results of which there is ample evidence in the sickness returns under the National Health Insurance Act. In addition to the general physical strain, a woman who has had children is more liable than one who has not to various forms of injury and disability arising from heavy work, work involving constant standing and so forth. Pathological conditions following upon confinement are likely to be accentuated and prolonged by certain forms of factory work. In such circumstances it is not possible for a woman to give her children that care and attention which are needful for healthy physical development and for the prevention of avoidable defects and ailments, or to make her home as pleasant, comfortable, and hygienic as she would otherwise do.

(To be concluded.)

INSURANCE ACTS COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION:

REPORT ON THE REVISION OF THE CONDITIONS OF SERVICE.

THE report on the revision of the conditions of service under the National Health Insurance Acts and on possible extensions of service, drawn up in May last and circulated for discussion by local medical and panel committees, was passed substantially as presented by the Special Conference held at the Connaught Rooms, London, on July 17th and 18th:—

Summary of the Main Changes.

A summary of the main changes that would take place in the present terms and conditions of service in the event of the suggestions contained in the report being carried into effect, was included in the report as follows:—

(i.) The central pool for the year would be actuarially fixed before the beginning of the year and the amount payable for the year to the practitioners collectively of each area (the local pool) would be known before the work of the year was commenced.

(ii.) The distribution of this known amount would be made to practitioners definitely quarter by quarter soon after the work of the quarter was completed.

(iii.) A first charge on the local pool would be the payment of an agreed fee in every area for the administration of general anæsthetics, and a second charge, if the practitioners of any area so wished, would be the payment of an agreed fee for attendance at miscarriages or for any one or more of a number of other specified special services.

(iv.) The distribution of the remaining portion of the local pool would then be made to practitioners in amounts proportionate to the names on each list, subject to some minor variations in the values to be attached to some names to meet special cases.

(v.) The present calculations and accounts for temporary residents and other like classes would be done away with, the payments for these classes being secured in the general distribution.

(vi.) The practitioners of an area would have no financial interest in the amount of the drug fund, the responsibility for any deficit in which would be assumed by the Treasury, but from the drug fund two payments would be made to all practitioners: (*a*) a small capitation fee, uniform for the whole country in respect of drugs supplied in emergencies; (*b*) a capitation fee, which might be variable from area to area or from practice to practice, in respect to dressings.

(vii.) Rural and semi-rural practitioners in every area would receive, in addition to the foregoing: (*a*) a payment from the drug fund in respect of patients for whom they dispense, fixed yearly on such a basis as to secure that the remuneration would be equal in every relevant respect to that of the pharmacists; (*b*) a payment from a special mileage or travelling fund calculated according to data, which would aim at securing for them an amount corresponding as nearly as possible to the excess cost of the necessary travelling (including extra time spent) over that of an urban practitioner.

(viii.) There would be a high limit—say, 3000—fixed for the whole country, beyond which no practitioner would be allowed to accept names on his list; but this limit would be for individual practitioners only. Every opportunity would be afforded for arrangements in the nature of partnership or assistantships, and, in the case of practitioners whose lists were above the prescribed limit on the day on which the limitation became operative, a period of one year would be allowed for the required reduction of the list, the practitioner himself having a voice in the exact method by which the reduction should be effected.

(ix.) It would be possible for a practitioner to come on the panel of an area under a special arrangement by which he would be guaranteed a small minimum payment for a period of two years, irrespective of the number on his list, provided that he undertook certain special obligations.

(x.) The machinery for keeping lists would be in some respects altered so as to eliminate the causes of some of the errors that have hitherto prevailed; at the same time the necessity for minute correctness would become relatively less important than hitherto.

(xi.) The present agreement between the practitioner and the Insurance Committee would be abolished, and the contract would take the form of a letter from the practitioner accepting the published terms and conditions.

(xii.) Specific arrangements would be made by which a practitioner could conditionally charge a fee (*a*) in cases in which there is a doubt as to whether the patient is entitled to medical benefit; (*b*) in cases where the service to be rendered is alleged to be outside the scope of medical benefit, but in which the practitioner claims to be specially qualified to render it, the amount of the fees in each case being deducted from subsequent payments to the practitioner should it be determined that the treatment was, in fact, due under the contract.

(xiii.) It would be permissible for a practitioner to arrange with fellow practitioners to undertake on his behalf certain kinds of treatment which, though within the scope of the contract, he was not, in fact, in the habit of undertaking in the case of his private patients—e.g., minor surgical operations.

(xiv.) The requirements with regard to (*a*) attendance on an insured person in an emergency; (*b*) the provision of a deputy during absence; (*c*) adequate surgery and waiting-room accommodation; (*d*) the maintenance of a satisfactory standard of competence as well as of conduct, would be strengthened.

(xv.) The arrangements for records and for certification would be revised with a view to making them less laborious and more useful.

(xvi.) Certain additional services would be established—e.g., consultations and specialised treatment, laboratories—and the arrangements with the tuberculosis service would be reviewed; in every case the general practitioner would have duties in connexion therewith; he would be encouraged to associate himself with the work thereof; and he would have the right, if possessing the necessary special qualifications, of being appointed to give the service in the same way as a consultant or specialist.

(xvii.) Medical referees would be appointed with responsible duties, which would include their acting indirectly in a supervising capacity over the administration of the clinical services.

(xviii.) The machinery for dealing with alleged breaches of agreement would be made more clear, and alterations would be made so as to remedy some points which appear inequitable to practitioners.

The limitation of the number of the panel list was defeated at the Conference, the division being a close one.

Recommendations.

The following definite recommendations were appended to the report:—

(I.) That, subject to a full consideration of any suggestions from Local Medical and Panel Committees or from the Group Conferences, and subject also to any resolutions of the July Conference, the Insurance Acts Committee be authorised to negotiate definitely with the Central Government Department for new terms and conditions of service for 1920 on the lines of this report and of the two interim reports already issued.

(II.) That the Insurance Acts Committee be requested throughout such negotiations to keep in touch with Local Medical and Panel Committees and with other professional organisations with a view to a decision at the October Conference on the question of the amount of remuneration which practitioners would agree to accept for the services to be rendered.

(III.) That as regards the additional services for insured persons suggested in the report, it is important that, as from early in 1920, these services should be regarded as an essential part of the whole service, though in practice they might be developed only gradually.

(IV.) That the Ministry of Health should consider as soon as possible through its Medical Consultative Council the order in which and the method by which such services should be extended to the non-insured population; but that in this connexion it is essential (*a*) that a general practitioner service should be established for any class of persons before such additional services are made freely available for that class; (*b*) that general practitioners, if possessed of the necessary qualifications, should be eligible to render such additional services; (*c*) that the clinical staff of any such additional service should be engaged on a part-time basis and should be remunerated on a time basis, and that a medical committee should play an important part in its selection.

(V.) That the Insurance Acts Committee be authorised on behalf of Local Medical and Panel Committees and in conjunction with other professional organisations to continue to hold "round table conferences" with the central Government department with regard to the extension of the service to the dependants of insured persons, the provision of residential institutional treatment, and the administrative arrangements which should be established for the proper provision and supervision of the service.

And these were confirmed by the vote of the Conference.

THE OXFORD OPHTHALMOLOGICAL CONGRESS, 1919.

ANNUAL MEETING.

THE tenth annual meeting of the Oxford Ophthalmological Congress was held on July 10th and 11th last in beautiful weather. Members were lodged in Keble College and the scientific proceedings took place in the Department of Human Anatomy of the University (kindly lent for the purpose by Professor Arthur Thomson), where technical and commercial museums were also arranged.

The programme was opened on July 10th by an address of welcome by the Master, Mr. SYDNEY STEPHENSON.—Major WALTER H. KIEP, R.A.M.C., read a paper on the Ocular Complications of Dysentery, which was followed by a good discussion on the subject.—Major EDGAR H. SMITH, R.A.M.C., read a communication dealing with "Quinine Amaurosis," well discussed by the members present.—Dr. WILLIAM MCLEAN, of New York, described his further experimental studies in intra-ocular pressure and tonometry, and exhibited his latest model tonometer.

A discussion on

Preventive Ophthalmology

was introduced by Colonel J. HERBERT PARSONS, C.B.E., consulting ophthalmic surgeon to the Forces. Colonel Parsons pointed out that the scope of his subject dealt with the prevention of damage (*a*) to the individual, and (*b*) to others. (*a*) included many subjects, such as prevention of damage to the eyes from accidents, defective illumination, deleterious rays and organisms, and the prevention of damage to health from headache, accident, fatigue, &c.; (*b*) included regulations for the prevention of the transference of contagious disease and rules for Navy, Army, Air Force, Mercantile Marine, railways, motor industry, cinemas, and so forth. The problems of preventive ophthalmology constituted a question of collective action, and were of particular value at the moment, when projects of reconstruction were to the fore. In connexion with the prevention of accidents to the eyes in factories, there is urgent need of a scale of awards for compensation founded upon scientific principles. The formulation of regulations for the public services demanded (1) a widening of the basis of education of ophthalmologists; (2) coöperation between ophthalmologists and other experts; and (3) improvement in the methods of examination of candidates and the selection of examiners.

After the discussion the Doyne Memorial medal was presented to Colonel Parsons by the Deputy Master, Mr. PHILIP H. ADAMS. In the afternoon members and their friends were entertained to tea in the gardens of Trinity College by Mr. D. N. Nagel, M.A., and Miss Nagel. In the evening the annual dinner of the Congress was held in the hall of Keble College, some 70 members and visitors being present. The toast-list was commendably brief.

After dinner the annual general meeting of the Congress was held in the junior common room at Keble College. Among other things it was determined, on the motion of Mr. J. B. STORY, to make representations to the General Medical Council in support of those recently preferred to that body by the Council of British Ophthalmologists concerning the instruction and examination of medical students in eye work. Readers of THE LANCET are aware that the recommendations in question have been rejected by the General Medical Council.

On July 11th the proceedings began with a paper by Dr. S. LEWIS ZIEGLER, of Philadelphia, on the Problem of the Artificial Pupil; Knife-Needle *versus* Scissors.—Dr. P. BAILLART, of Paris, followed with a communication dealing

with his dynamometer for determining the blood pressure in the branches of the central retinal artery.—Mr. A. F. MACCALLAN (Cairo) read a paper on the Seasonal Variations of Acute Conjunctivitis in Egypt.—Colonel A. H. TUBBY entered a suggestive plea for investigation as to any possible connexion between skeletal asymmetry, on the one hand, and defects of the eye, on the other.

A discussion upon Employment for the Blind was introduced by three blind speakers—namely, Mrs. ADOLPHUS DUNCOMBE, Captain PEIRSON WEBBER, and Captain TOWSE, V.C., and it is to be hoped that useful action will be undertaken by the Congress in connexion therewith.

In the afternoon the Ashhurst War Hospital at Littlemore, near Oxford, was thrown open to members by Lieutenant-Colonel T. S. GOOD, R.A.M.C.

The Congress was well attended, and a pleasing feature was the presence of representatives from Canada, Australia, Egypt, the United States, France, and Norway.

TUBERCULOSIS.

The Establishment and Conduct of a Tuberculosis Sanatorium.

THE Department of Health of the city of New York has published a monograph of 138 pages on the above subject by Dr. Charles B. Slade, visiting physician to the Municipal Sanatorium at Otisville. This book is full of good and much-varied advice, and deals with as widely different subjects as climate, building plans, and the qualifications to be found in the ideal sanatorium physician. Even the attitude of residents to a sanatorium in their neighbourhood is discussed. The author calculates that sanatorium accommodation should be provided for not less than 1 to 3 per 1000 of the community for which it is established. A complete sanatorium, with a capacity for 500 or more patients, should consist of five units—a reception, a men's, a women's, a children's, and an administration unit. A medical superintendent should be "of good moral character and temperate habits," and he should have practised his profession with reasonable success for several years, have had one to three years' "internship" in a general hospital, several years' experience in outdoor clinics for tuberculosis, some familiarity with the conduct of sanatoriums, and a wide knowledge of people. The monograph also discusses such vexed questions as the remuneration of work done by patients and ex-patients. The physical examination of the chest, the daily routine of a sanatorium, principles of treatment, after-care, and a host of other subjects come under review.

Annual Report of the Tuberculosis Officer for Wigan.

This report, which is for 1918, in addition to giving the usual statistics, records the fact that the cases received direct from the Army, through the Insurance Commissioners, were in a comparatively early stage of the disease, and the prospect of restoration to working capacity was correspondingly good. But 48·8 per cent. of the 217 deaths between July, 1912, and Dec. 31st, 1918, occurred within six months of application for sanatorium benefit. This deplorably high percentage is regarded as absolute proof of the urgency of the need for still further coöperation between the panel doctors and the tuberculosis dispensaries.

Trudeau Sanatorium: Thirty-fourth Annual Report.

Of the 259 patients discharged in the year under review, 52·9 per cent. were classified as cases of arrest or quiescence. In a further 13·1 per cent. the disease was improved, and in 17·7 per cent. the patients were either not tuberculous or classified merely as tuberculosis suspects. A notable fact was the increasing number of patients in whom the diagnosis of tuberculosis was in doubt (42), and this was interpreted as the result of the widespread educational campaign that had taught patients to seek advice early, and physicians to send more persons with suspicious symptoms for observation. The staff has found the study of these cases most instructive and excellent material for demonstration to the Trudeau School. The good results achieved by the radical bed-rest method have been maintained, but graduated exercise was the treatment adopted for the majority. Tuberculin was largely discontinued and artificial or natural light treatment was adopted in a few cases. The influenza vaccine, which was given to a large number of patients, seemed to be harmless as well as prophylactic. No fewer than 125 former patients and members of the staff joined the various services; with what result is not stated. The work of the X ray laboratory included 2000 examinations, requiring 5000 plates, and 1500 fluoroscopic examinations. The principal occupations for the patients were basket-making, clay-modelling, photography, and typewriting. At the fourth session of the Trudeau School of Tuberculosis, 25 physicians and medical students were enrolled; of the 59 physicians trained during the four sessions, most have taken a definite position in tuberculosis work.

Injections of Saccharose in Pulmonary Tuberculosis.

Writing in the *Corresp. Bl. f. Schweis. Arzt.* for April 12th Dr. P. von Schulthess-Rechberg notes that, in his experience, the beneficial action of saccharose in pulmonary tuberculosis appears to be limited to a reduction of the sputum. Of the nine patients thus treated six reacted with severe local as well as with general disturbances, and also with a rise of temperature. One patient died a fortnight after the treatment was started, and four gave it up on account of the reactions provoked. In four cases the reduction in the amount of sputum varied between 20 and 80 per cent. In all but one case there was no corresponding improvement in the physical signs. The most important observation in this series of cases is that the injections, whatever their merits, are liable to provoke serious and even dangerous reactions.

MEDICINE AND THE LAW.

Professional Secrecy: The Military Aspect.

THE question of professional secrecy, difficult enough in England, is in France posed on a somewhat different basis. At a meeting of the Société de Médecine Légale (de Paris), according to the *Presse Médicale* (1919, xxxvii., 367), M. Granjux discussed some military aspects of the problem, for apparently there have been medical "incidents" and, it is suggested, administrative "errors" that have provoked public comment. At any rate, M. Granjux feels that two separate sets of circumstances should be distinguished. In the first, a soldier (officer or man) reports, or "goes sick," as we say, and is seen by the medical officer in the course of familiar routine. The ordinary social and ethical relationship and obligations, as between doctor and patient, do not then obtain; military administration and disciplinary necessities alone are involved, and the civil issue of professional secrecy cannot arise. In the second case recognised by M. Granjux, the circumstances, though not unknown, are less familiar to those who have served in the R.A.M.C. We are here asked to consider the case of a "militaire" (officer or man) who seeks the advice or services of the doctor without first going through the process of "reporting sick." Then, says M. Granjux, the surgeon must respect his patient's confidence. It appears, however, that when a "militaire" who has thus sought and obtained the advice of his battalion medical officer is afterwards compelled to "go sick," the ethical rule recognised by all officers of the Corps de Santé is to forget all that has passed, and to begin again on a purely military and official footing.

The Civil Aspect.

At the same session as that at which the military difficulty was discussed, M. Berthélemy reopened the civil question, which has become recently, in France, of some moment. While, on the one hand, the proposal to make obligatory the notification of tuberculosis has provoked many objections; on the other, the crusade against criminal abortion bids fair to involve doctors in many difficulties. As is well known, the French Penal Code, by Article 378, constitutes the violation of professional secrecy a punishable offence, save only when the breach is in response to the definitely imposed legal obligation to give information under certain circumstances. As the result of certain decisions of the Cour de Cassation, however, the law, in the words of M. Berthélemy, has converted the custom of professional secrecy into a tyrannical obligation laid upon medical men, overriding the social duty of assisting justice. And M. Berthélemy thinks that it has been an error thus to convert what should be a facultative means of escape from

the witness-box into an absolute prohibition of the right to perform a duty to society.

We gather that it is now proposed, in certain legal instruments designed to check the practice of criminal abortion, to enforce the rigid application of the doctrine of professional secrecy by the clearest legal provision—the impulse coming from the public rather than from the profession. M. Berthélemy thinks, however, that it were better for medical men to be absolved from the social duty in particular circumstances rather than to be forbidden ever to perform it.

An International Contrast.

This striking contrast then obtains: that while in England the effect of the strict interpretation of the law is to impose on medical men the "social duty" of giving information of the commission of a crime, and is in opposition to the views of that body of professional opinion (recently voiced by Sir John Tweedy) which clings to the sanctity of the professional secret as a professional privilege; in France, on the other hand, there is an apparently strong current of professional resentment against the proscription by the law of the right to exercise, save under extremely limited conditions, the duty to society. It is not suggested for one moment that our French brethren are less scrupulous than are we in their allegiance to the spirit and letter of the Hippocratic oath, but they are clear-headed and logical enough to recognise the possible evil to the State if medical men, in response to public clamour, are forced to "contract out" of social obligations which are not less incumbent on them than on others.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza Epidemic.

THE progress of epidemic influenza has shown little that is new during the past month. In Sydney there has been a gradual decline, and early in May the Government removed all restrictions, including the wearing of masks in trains and trams. There are no figures which are at all accurate as to the extent of the outbreak, but the number of deaths will be not short of 1000 in New South Wales for the present wave. In Melbourne the attack-rate, as gauged from the death-rate, has been curiously steady, and from 20 to 30 deaths are being still reported daily for the whole of Victoria. The disease has been just as prevalent in country districts as in towns, and severe cases are as often met with. Brisbane is now definitely suffering from an epidemic, but as yet the dimensions are not alarming. Adelaide has also now become infected, although the number of cases is not great. Several well-known medical men have succumbed to the disease in different States, and scarcely any practitioner has escaped more or less severe infection. The resident medical officers at all hospitals have been at some time patients during the past few months.

There is as yet no clear-cut evidence as to the value of any preventive measure adopted during the epidemic, but opinion is crystallising that nothing so far attempted has been of any avail in staying the spread of influenza. The experience of public mask-wearing in Sydney does not support the idea that it is worth while, and it has been regarded by all as very irksome and disagreeable. Inhalatoriums in which medicated steam was supplied for a few minutes were loudly advocated by some, but in Sydney the medical committee, after employing them, condemned them as harmful. In Melbourne they were never used except by the Public Health Department at a hospital and at the quarantine grounds. Inoculation may be said to have lost most of its friends and supporters, both lay and professional. Some observers still persist that it modifies the symptoms, but this is purely a personal opinion, and no evidence in support of the assertion is produced.

In Victoria the acting Minister of Health has appointed Dr. H. Newton as controller of influenza hospitals, and has also created an additional staff of transport and organisation in connexion with the epidemic aspect of influenza. This work was in the hands of the chairman of the Board of Public Health, but it has proved too much for a single direction, and the change was made in response to public clamour for more vigorous action. No considerable steps have as yet resulted from the new policy.

Melbourne University: an Overcrowded Medical School.

The Council of the Melbourne University approached the Victorian Government with a request for money in order to provide increased accommodation for students. Every school is said to be overcrowded, but the urgent requirement is in the medical school, which during the past two years has been taxed to breaking point to find room for first- and second-year students. It was proposed some time ago to remove the medical school to a separate site in the vicinity of the hospitals, but this scheme failed to attract political support, although it was approved by the profession and by some of the University staff. The Premier was sympathetic to the recent deputation and has undertaken to find a sum of £200,000 to build and equip new class-rooms and laboratories.

Venereal Disease.

A return has been issued of the number of cases of venereal diseases notified in Victoria for the year 1918. It appears that 6790 persons were affected (State population about 1,250,000). Gonorrhœa was returned alone in 4878 cases, syphilis in 1686, and the two in combination in 99 patients. The remainder were various combinations of infection. In Victoria the diseases are compulsorily notifiable and there are penalties for neglecting treatment. There are clinics for treatment managed wholly by the Government, and some of the general hospitals have been brought into the scheme although the provision on this regard is not yet very great.

Personal.

Colonel H. Maudsley, C.M.G., C.B.E., has arrived in Melbourne after an absence of four years on duty with the A.A.M.C. in Egypt and England. Colonel Maudsley is lecturer on medicine in the University of Melbourne and will take up his position shortly.

Lieutenant-Colonel Sir James Barrett, K.B.E., has also returned to Melbourne and resumed private practice.

The death is announced of Surgeon-General Sir W. T. Williams, who was the Director-General of the Commonwealth Military Forces at the outbreak of war, but resigned owing to ill-health. General Williams had a distinguished record in the Boer war with the New South Wales contingents, and was the first Director-General of the Federal military organisation.

May 27th.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING JUNE, 1919.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 4·7 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·5, 4·6, and 4·5 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Hammersmith, the City of Westminster, Hampstead, St. Pancras, the City of London, and Wandsworth; and the highest in Chelsea, Holborn, Bethnal Green, Stepney, and Southwark. Two cases of small-pox were notified during the month, against 7, 2, and 3 in the three preceding months; these cases belonged respectively to Stepney and Lambeth. The cases of small-pox under treatment in the Metropolitan Asylums Hospitals at the end of the month numbered 2, against 6, 1, and 3 at the end of the three preceding months. The prevalence of scarlet fever was slightly more than in the preceding month; this disease was proportionally most prevalent in Finsbury, Stepney, Southwark, Lambeth, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1132 scarlet fever patients at the end of the month, against 1009, 1043, and 1066 at the end of the three preceding months; the weekly admissions averaged 157, against 126, 138, and 150 in the three preceding months. The number of notified cases of diphtheria was the same as in the preceding month; the greatest prevalence of this disease was recorded in Kensington, Chelsea, Holborn, Shoreditch, Bethnal Green, and Southwark. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1152, 1134, and 1086 at the end of the three preceding months, numbered 1021 at the end of June; the weekly admissions averaged 138, against 164, 151, and 145 in the three preceding months. Twenty-four cases of enteric were notified during June, against 13, 18, and 22 in the three preceding months; of these cases, 5 belonged to Kensington, 3 to Poplar, 2 to Paddington, and 2 to Lewisham. There were 25 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 16, 16, and 19 at the end of the three preceding months; the weekly admissions averaged 5, against 3, 2, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Stoke Newington, Holborn, Bethnal Green, Poplar, and Southwark. The 18 cases of puerperal fever notified during the month included 2 each in Islington, Poplar, Wandsworth, Camberwell, and Deptford. Of the 14 cases of cerebro-spinal meningitis 2 belonged to Battersea and 2 to Greenwich; while of the 6 cases of poliomyelitis 2 belonged to St. Marylebone.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1919.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	4,026,901	2	654	570	—	24	—	18	151	14	6	1439	4·7	—	23	6	37	6	—	35	107	0·3	3011	9·7
West Districts:																								
Paddington	122,507	—	12	18	—	2	—	1	6	—	1	40	4·3	—	1	—	—	—	—	1	2	0·2	83	8·8
Kensington	151,535	—	14	34	—	5	—	1	7	1	—	62	5·3	—	4	—	2	—	—	1	7	0·6	140	12·0
Hammersmith	114,952	—	10	14	—	—	—	1	1	1	—	27	3·1	—	—	1	—	1	—	3	5	0·6	72	8·2
Fulham	145,186	—	24	16	—	—	—	1	5	—	—	46	4·1	—	1	—	—	—	—	1	2	0·2	95	8·5
Chelsea	57,368	—	11	16	—	1	—	—	—	—	—	28	6·4	—	—	—	1	—	—	—	1	0·2	45	10·2
City of Westminster	122,046	—	10	6	—	—	—	—	5	1	—	22	2·3	—	1	—	—	—	—	—	1	0·1	93	9·9
North Districts:																								
St. Marylebone	92,796	—	16	16	—	—	—	—	3	—	2	37	5·2	—	1	1	1	1	—	1	5	0·7	74	10·4
Hampstead	75,649	—	5	6	—	1	—	—	—	—	—	12	2·1	—	—	—	1	—	—	1	2	0·3	49	8·4
St. Pancras	186,600	—	26	15	—	—	—	—	7	—	1	49	3·4	—	3	1	—	—	—	1	5	0·3	142	9·9
Islington	297,102	—	40	59	—	1	—	2	10	1	—	113	5·0	—	1	—	3	—	—	3	7	0·3	238	10·4
Stoke Newington	47,426	—	9	5	—	—	—	—	3	—	—	17	4·7	—	—	—	1	—	—	—	1	0·3	40	11·0
Hackney	196,598	—	36	30	—	1	—	—	5	—	—	72	4·8	—	—	—	5	—	—	2	7	0·5	154	10·2
Central Districts:																								
Holborn	35,303	—	6	13	—	—	—	—	2	—	—	21	7·8	—	—	—	—	—	—	—	—	—	28	10·3
Finsbury	68,011	—	14	10	—	—	—	—	—	—	—	24	4·6	—	—	—	—	—	—	—	—	—	65	12·5
City of London	16,138	—	1	1	—	—	—	—	—	—	—	2	1·6	—	—	—	—	—	—	—	—	—	9	7·3
East Districts:																								
Shoreditch	89,675	—	2	19	—	1	—	—	4	1	—	27	3·9	—	—	—	2	—	—	—	—	—	83	12·1
Bethnal Green	107,362	—	21	22	—	—	—	—	10	—	1	54	6·6	—	3	—	2	—	—	2	7	0·8	88	10·7
Stepney	232,010	1	76	40	—	1	—	—	9	1	—	128	7·2	—	1	1	1	1	—	3	7	0·4	179	10·1
Poplar	143,443	—	19	13	—	3	—	2	8	—	—	45	4·1	—	1	—	2	—	—	2	5	0·5	115	10·5
South Districts:																								
Southwark	167,936	—	60	41	—	1	—	—	12	1	—	115	8·9	—	—	—	7	1	—	—	8	0·6	121	9·4
Bermondsey	107,635	—	14	19	—	1	—	—	4	—	—	38	4·6	—	1	—	—	—	—	1	2	0·1	86	10·4
Lambeth	272,038	1	59	23	—	1	—	1	13	1	—	99	4·7	—	2	—	5	—	—	4	11	0·5	227	10·9
Battersea	150,023	—	20	21	—	—	—	1	6	2	—	50	4·3	—	—	—	—	—	—	1	1	0·1	107	9·3
Wandsworth	300,787	—	36	19	—	1	—	2	6	1	1	66	2·9	—	—	—	2	—	—	1	3	0·1	202	8·8
Camberwell	239,461	—	32	28	—	—	—	2	11	—	—	73	4·0	—	1	1	—	2	—	5	9	0·5	169	9·2
Deptford	103,527	—	22	9	—	—	—	2	5	—	—	38	4·8	—	1	—	—	—	—	—	1	0·1	60	7·6
Greenwich	90,440	—	19	10	—	1	—	—	—	2	—	32	4·6	—	—	1	—	—	—	1	2	0·3	62	8·9
Lewisham	161,405	—	25	25	—	2	—	1	7	1	—	59	4·8	—	—	—	1	—	—	1	2	0·2	96	7·8
Woolwich	131,942	—	15	24	—	1	—	1	2	—	—	43	4·2	—	1	—	3	—	—	1	5	0·5	89	8·3
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended June 28th the deaths of 3011 London residents were registered, equal to an annual rate of 9·7 per 1000; in the three preceding months the rates had been 20·9, 15·0, and 11·1 per 1000. The death-rates ranged from 7·3 in the City of London, 7·6 in Deptford, 8·2 in Hammersmith, 8·4 in Hampstead, and 8·5 in Fulham, to 10·7 in Bethnal Green, 10·9 in Lambeth, 11·0 in Stoke Newington, 12·0 in Kensington, 12·1 in Shoreditch, and 12·5 in Finsbury. The 3011 deaths from all causes included 107 which were referred to the principal infectious diseases; of these, 23 resulted from measles, 6 from scarlet fever, 37 from diphtheria, 6 from whooping-cough, and 35 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Holborn, Finsbury, the City of London, and Shoreditch. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, Bemondsey, Battersea, Wandsworth, and Deptford; and the highest in Kensington, Hammersmith, St. Marylebone, Bethnal Green, and Southwark. The 23 deaths from measles were less than a fifth of the average number in the corresponding period of the five preceding years; of these deaths 4 belonged to Kensington, 3 to St. Pancras, 3 to Bethnal Green, and 2 to Lambeth. The 6 fatal cases of scarlet fever were 7 below the average number. The 37 deaths from diphtheria were one less than the average; of these deaths 7 belonged to Southwark, 5 to Hackney, 5 to Lambeth, 3 to Islington, and 3 to Woolwich. The 6 fatal cases of whooping-cough were one-twelfth of the average number; of these 2 belonged to Camberwell. No death from enteric fever was recorded during the month, against an average of 9. The 35 deaths from diarrhœa and enteritis among children under 2 years of age were 20 less than the average number; of these deaths, 5 belonged to Camberwell, 4 to Lambeth, 3 to Hammersmith, 3 to Islington, and 3 to Stepney. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during June was 66 per cent. below the average.

(Week ended July 19th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9·6, 10·0, and 10·1 in the three preceding weeks, declined to 9·0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 9·2, or 0·8 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·3 in Norwich, 4·4 in Wakefield, and 4·5 in Coventry, to 13·8 in Stoke-on-Trent, 14·2 in Gillingham, and 14·7 in Darlington and in Sunderland. The principal epidemic diseases caused 109 deaths, which corresponded to an annual rate of 0·3 per 1000, and included 35 from diphtheria, 34 from infantile diarrhœa, 19 from measles, 11 from whooping-cough, 6 from scarlet fever, and 4 from enteric fever. The mortality from these diseases showed no marked excess in any town. There were 5 cases of small-pox, 1438 of scarlet fever, and 1100 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 6, 1348, and 1068 respectively at the end of the previous week. The causes of 21 deaths in the 96 towns were uncertified, of which 4 were registered in Birmingham, and 2 each in London, Stoke-on-Trent, Middlesbrough, Darlington, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 11·5, 9·9, and 11·0 in the three preceding weeks, fell to 10·6 per 1000. The 227 deaths in Glasgow corresponded to an annual rate of 10·6 per 1000, and included 10 from whooping-cough, 4 from diphtheria, and 3 each from measles and infantile diarrhœa. The 59 deaths in Edinburgh were equal to a rate of 9·1 per 1000, and included 1 each from measles, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 70 deaths in Dublin corresponded to an annual rate of 9·0, or 4·1 per 1000 below that recorded in the previous week, and included 6 from infantile diarrhœa. The 84 deaths in Belfast were equal to a rate of 10·9 per 1000, and included 1 each from measles, scarlet fever, diphtheria, and infantile diarrhœa.

BRISTOL HOSPITAL SUNDAY FUND.—Mr. J. H. Reed has retired from the honorary secretaryship of this fund after 21 years, during which time nearly £47,000 have been collected for the Bristol medical charities, and the annual total of a few hundreds increased to £5300.

DONATIONS AND BEQUESTS.—By the will of the late Mr. W. Shepherd, of Clapham Park and Guildinhurst Manor, Sussex, who left property of the value of £600,000, the testator has bequeathed the larger part of this sum to London hospitals.—Under the will of the late Mr. Longueville Gladstone, of Liverpool, the testator has left £1000 to the Liverpool Royal Infirmary, £700 to the Royal Southern Hospital, £500 each to the David Lewis Northern Hospital, Stanley Hospital, and the School for the Indigent Blind, and £2000 for such other charities as the executors and Mayor of Liverpool may select.—The late Miss Mary Austin, of Bath, has, among other bequests, left £500 each to the Finsbury Dispensary, Clerkenwell, and to the Norwood Cottage Hospital, and, on the death of her sister, £500 each to the Middlesex Hospital, Westminster Hospital, Guy's Hospital, and the Royal United Bath Hospital.—Subject to the life-interest of two sisters, the late Dr. J. Duff, of Chester, has left by will property of the value of £9752 to Glasgow University to form a Fellowship for the elucidation of malignant diseases.

Correspondence.

"Audi alteram partem."

INCIPIENT MENTAL DISEASES.

To the Editor of THE LANCET.

SIR,—In reports of committees, in articles in medical papers, in books recently published, and in last year's report of the Board of Control the early treatment of these cases without certification and by simple notification has been earnestly suggested. Now a whisper reaches me that during the next session the Ministry of Health intend to bring in a short Bill dealing with these cases, and my very heart rejoices.

One great drawback to the early treatment of mental diseases has not only been the Lunacy Act of 1890, but also the curious unreasonable attitude of the general public, who still insist in looking at mental disease as a "stigma" on the family. By allowing these cases to be under the Board of Control, which deals only with mental diseases, and under their supervision, as suggested in their last year's report, this "stigma" would still exist; whereas if these cases are dealt with by the Ministry of Health, together with all sorts of other diseases, the idea of "stigma" will be done away with.

There are, however, some important points to be considered and brought to the notice of the general public.

(1) There seems to be difficulty in the minds of those who are bringing in this Bill as to the way in which these cases should be defined. Should they be called: (*a*) not certified cases, (*b*) uncertifiable cases. Personally I prefer the latter definition, as the first one leaves the question open as to whether or no they are certifiable.

(2) *Supervision.*—These cases must be under some supervision. I feel sure the Ministry of Health will deal with these cases with regard to proper supervision in the most humanitarian manner. The Board of Control, in their 1918 report, agree as to the necessity of supervision, but do not see their way to carry it out with their present staff and the work they have already in hand, so it ought to be a comfort to them to find the Ministry of Health are taking up this matter.

(3) As to who should take charge of these cases it seems to be obvious that the more skilled supervision and treatment they come under the greater will be their chance of recovery. Single cases may be in some instances easily and properly placed, but I am strongly of opinion that "approved homes" for such cases should be permitted, as are now allowed for cases of mental deficiency. Such approved homes should be under the charge of experienced physicians if good results are to be obtained.

(4) Limitation of sojourn for such cases. It has been suggested, both by the Board of Control and committees, that such period should be for six months only. To my thinking this is utterly wrong, unless such period be renewable in certain cases. A patient may be nearly well when the six months has expired. To suddenly take such a patient from the care and treatment and the environment in which he or she has got well to some new home surroundings and treatment might be fatal. I therefore consider that the six months should be renewable in certain cases.

We who have spent our lives in treating mental diseases in all stages have only one wish, and that is to increase the recovery rate of mental diseases, which has stood still during the last 60 years. I trust my suggestions will meet not only with your approval, but with that of the medical profession, the general public, and the Ministry of Health.

I am, Sir, yours faithfully,

July 21st, 1919. LIONEL A. WEATHERLY, M.D.

PARAFFIN WAX IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—In your issue of July 19th Lieutenant-Colonel Spencer Mort contributes a very interesting and carefully thought-out article on this subject, and advises the use of paraffin wax for facial scars and depressions of contour of the face. There is no doubt that his method of insertion of paraffin wax is the most practical and fruitful in giving good immediate results. I cannot, however, let the opportunity pass without entering a protest against the practice of insertions into the facial tissues of any foreign body, and of wax in particular. Before my department was moved en bloc to Sidcup it had been clearly shown by myself and my colleagues that the natural tissues of the body, in the form of autologous grafts or tissue flaps, give ultimate results quite as cosmetic as those of any foreign body implantation.

In regard to paraffin, in 1916 I was inserting it in blocks, and I also used the syringe method, which gives such excellent immediate results with those who are familiar with the method, particularly the Bond Street beauty specialists. I thoroughly agree with Colonel Mort in condemning this practice; in fact, I should go so far as to say that the injection of melted paraffin into the face is a practice that should be prohibited by law. A solid block of paraffin wax is better than the injected wax, in that the late bad results are fewer and more easily dealt with; at the same time, fibrosis must naturally occur round any block of paraffin in the attempt, sometimes successful, of the tissues to get rid of the foreign body. When placed deep I admit little harm comes therefrom, but I think the practice is a retrograde step.

The class of case with which Colonel Mort states he has had the best results—viz., depressed scars—can easily be remedied by excision of the scar tissue and the use of subcutaneous flaps to build up the contour. In the larger depressions cartilage implantations or muscle flaps, combined with complete and total excision of the scar, give the most perfect results possible. This opinion is shared by all my facial colleagues at the Queen's Hospital, and, in particular, by our consulting surgeon, Sir William Arbuthnot Lane.

I am, Sir, yours faithfully,

H. D. GILLIES, F.R.C.S.,

London, July 23rd, 1919. Major, R.A.M.C.

NATIONAL HEALTH INSURANCE AND THE MEDICAL GUILD.

To the Editor of THE LANCET.

SIR,—I have been instructed by Dr. John Playfair, the President, and the Executive Committee of the Medical Guild to submit for your consideration the following suggestions embodied in certain resolutions passed at recent meetings of the Guild, after full consideration of the Memorandum of the Insurance Commissioners and the report of the Insurance Acts Committee of the British Medical Association on the Revision of the Conditions of Service under the National Health Insurance Acts and possible extensions of service:—

(1) That professional attendance and treatment given to any insured person by any registered medical practitioner acting solely on the usual understanding subsisting between a practitioner and his private patient shall be recognised as medical benefit for that person, and such person shall receive a just contribution from moneys provided for medical benefit towards the payment of such attendance and treatment.

(2) That obstetric practice should not be included within the range of National Health Insurance.

(3) That tuberculosis should be excluded from the range of National Health Insurance.

(4) That the National Health Insurance Acts as at present administered should not be extended, with the exception of specialists' advice to the present insured.

(5) That a State Medical Service is of urgent necessity for the genuinely necessitous classes of the community and for them only.

With regard to the first of these resolutions or suggestions, it has been estimated that there are approximately 20,000 insured persons in Edinburgh who receive professional attendance and treatment from non-panel practitioners, and as this number is increasing annually it is a matter of justice that those persons should be allowed a money contribution towards payment of such attendance and treatment, especially when the fact is taken into account that the large sum of money for payment of the medical benefit of those persons is being paid to, or distributed among, the panel practitioners who do not work and never will have the opportunity of working for this money. This statement is applicable to other towns and cities.

I am, Sir, yours faithfully,

FREDERICK PORTER,

Edinburgh, July 15th, 1919. Honorary Secretary.

THE ORIGIN OF LIFE: THE WORK OF THE LATE CHARLTON BASTIAN.

To the Editor of THE LANCET.

SIR,—Dr. Albert Mary's letter in THE LANCET of June 28th is most interesting, and his experiments show that Dr. Bastian's results are probably due to chemical actions of a catalytic nature; but the influence of osmotic pressure, by diffusion effects in colloid solutions, is also an important factor that must not be neglected in such operations. Dr. Stéphane Leduc has obtained some very remarkable results in this connexion.[1] Artificial bodies, known since Butschli's day as *simulacra*, can be brought about apparently without the aid of life.[2] In many chemical reactions, as well as purely physical ones, there is a swift passage of electrons, both positive and negative, through the medium in which the reaction takes place. I may perhaps mention in this connexion the very beautiful experiments by Emil Hatschek,[3] which show on a larger scale that the swift passage of a body, or even a drop of liquid, through a "gel" can give rise to motions of the nature of vortices in the "gel," resembling organisms; and I conceive that many chemical reactions and the emission of α and β particles from radio-active substances, immersed in colloid mediums, should do so likewise, producing such vortex motions resembling bacteria on a much smaller scale. In fact, I have described phenomena of this kind in *Nature* (May 25th, 1905), and in the *Fortnightly Review* (September, 1905), as well as in my book "The Origin of Life," 1906. These bodies, which I called at the time *radiobes* owing to their mongrel origin, differ considerably from the precipitated products of barium, strontium, or lead, as might have been expected. But this is a point that some observers seem to have overlooked, for the products of radium are something more than mere precipitates as their behaviour shows, and have many of the properties of living organisms, though not all of them, since they do not produce subcultures, perhaps owing to the medium being unsuitable, as in Dr. Mary's experiments. It seems to me, then, that both Dr. Bastian and Dr. Mary's results may be explained by the setting up of such vortex motions through catalysis and the rapid interchange of electrons which it involves, whilst in some cases by mere diffusion and osmosis, as in the experiments of M. Leduc already referred to. But, as I have found, the immersion of a radio-active substance in a colloid medium facilitates their production, and this, no doubt, for the dynamical reasons which I have just endeavoured to explain.

I am, Sir, yours faithfully,

Kingston Hill, July 17th, 1919. J. BUTLER BURKE.

QUININE AS A PROPHYLACTIC IN MALARIA.

To the Editor of THE LANCET.

SIR,—When serving at Sierra Leone about ten years ago I came across the following extract from the medical history of the war in the Gold Coast Protectorate in 1873, written by Deputy Surgeon-General Sir A. D. Home, V.C., K.C.B.:—

"The use of quinine as a prophylactic against 'fever' to the troops on the Gold Coast had been one of the sanitary instructions of the D.G. issued to the P.M.O. on his assuming charge.

It need not be said that the use of the drug in this way to men employed on duty on malarious coasts is an established practice in the Navy, one recommended by the authority of high professional opinion as to its value. Accordingly, Army medical officers serving on the Coast were requested in Departmental orders to give quinine daily in a prophylactic dose.

It was not possible to procure the information asked for as to the influence of quinine in warding off attacks of fever, as medical officers had been changed so frequently and the composition of the detachments had varied so much that continuous observation of the same individuals, even for one month, was unattainable.

On so important a subject, however, in the absence of precise data, it may be desirable to state the conclusions come to with respect to it from observation.

With regret, and heartily wishing that my opinion may be overthrown by others, I have to say that I did not recognise any value in quinine given prophylactically. It neither seemed to ward off attacks or to mitigate the severity of malarious fevers in those attacked. With the exception that in some men a daily 3 gr. dose produced transient deafness, and in a few others nausea, no untoward symptoms followed the use of the medicine. On the other hand, I was unable to agree with the startling opinion seriously propounded to me by some men of the West India Regiment encamped at Fort Napoleon, that the quinine given daily as a prophylactic had given them the ague from which they suffered."

During the year I acted as senior medical officer every soldier stationed at Freetown got 10 gr. on Thursday and 15 gr. on Friday. I kept its administration in the hands of one officer whom I placed in charge of the Tower Hill Hospital, and in order that there should be no break I arranged to keep him there for the whole year.

He reported 25 per cent. less attacks than during the previous year!

I consider that if he had been able to report a diminution of, say, 75 per cent., one would have been justified in thinking that quinine in these doses had acted as a prophylactic. The number of cases might easily vary to the extent reported from other causes.

Curiously enough, a soldier of the West India Regiment told me that his bi-weekly dose of quinine was invariably followed by an attack of ague.

I am, Sirs, your faithfully,

F. J. W. PORTER,
Major, R.A.M.C. (retd.).

Bombay, June 14th, 1919.

[1] See his "Mechanism of Life," translated by Dr. Deane Butcher, 1911.
[2] Microscopic Foam and Protoplasm, 1894.
[3] Proc. Roy. Soc., Series A, vol. xcv., No. 669.

PROFESSIONAL SECRECY IN THE EYE OF THE LAW.

To the Editor of THE LANCET.

SIR,—Sir John Tweedy's letter in your issue of July 5th, dealing with the accepted canons of the medical profession in disclosing the confidences of patients, suggests an analogy with confidences made to the clergy. Some of your clientele are old enough to recall the "Road" murder, which for a long time baffled detection. Then the Rev. A. D. Wagner, who was vicar of St. Paul's, Brighton, and who ran an Anglican Conventual establishment in that town, induced one of his penitents, who had confessed to him that she was guilty of the crime, to make a clean breast of it to the civil authorities. If I remember rightly, for it was in the early "sixties," the line that this clergyman took was that he himself was unable to divulge what had been told to him under confessional secrecy, but that he made it very patent to this poor unfortunate girl that if she was truly penitent she should make an open confession of the murder she had committed, which confession at the same time would exonerate such as were still under suspicion of having been the perpetrators.

Even now there is being discussed in the United States a very interesting example of a refusal to betray trust. Four years ago Judge Lindsey, of Denver Juvenile Court, had before him a certain boy with whom he had talked in his capacity as Juvenile Judge, and to whom he had given his solemn promise that he would not disclose any statement the boy made to him. Plainly the element of confidence between the judge and the child is essential to the success of the Juvenile Court. As plainly, to destroy this relationship would be, in effect, to nullify and set aside the chief end and purpose of the Juvenile Court.

I am, Sir, yours faithfully,

THEODORE P. BROCKLEHURST,
Rector of Giggleswick-in-Craven.

July 14th, 1919.

PENTOSURIA.

To the Editor of THE LANCET.

SIR,—With reference to your annotation under the above heading in THE LANCET for July 19th (p. 117), my experience may be interesting as bearing on the frequency with which this condition is met with. During the month of June I saw 56 cases diagnosed as diabetes mellitus, and of these 11 proved to be passing pentoses in their urine; 9 were found to be of the alimentary type, the characteristic diphenylhydrazone and para-bromphenylosazone of l-arabinose being recovered from the urine; and 2 were cases of true, or essential, pentosuria, the first examples of this condition met with in England, I believe. One of these cases of essential pentosuria passed i-arabinose alone; the other excreted a mixture of this sugar with dextrose and pseudo-lævulose. Under treatment the dextrose and pseudo-lævulose soon disappeared from the urine of the latter, leaving the inactive pentose. These cases are being investigated further, but it is interesting to note that both of them had been treated for diabetes for some time before I saw them, one for 16 years and the other for one year. In 4 of the cases of alimentary pentosuria l-arabinose was the only sugar found in the urine, in 4 it was associated with more or less dextrose, and in 1 there was a small percentage of true lævulose. My observations suggest that alimentary

pentosuria is commonly associated with hepatic disturbances, and it is partly to this that the lowered tolerance for pentose is probably due. The amount of fruit taken by these patients was in no case large, and in all of them analysis of the urine revealed evidence of hepatic insufficiency. I am, Sir, yours faithfully,

P. J. CAMMIDGE.

Nottingham-place, Marylebone, W., July 18th, 1919.

THE ABILITIES OF THE DISABLED.

To the Editor of THE LANCET.

SIR,—On Friday, July 25th, a meeting has been arranged in Central Hall, Westminster, at 3 P.M., specially designed to interest and encourage men who have suffered some physical disability during the war. The meeting is under the joint auspices of the British Red Cross and the London War Pensions Committee, and Sir Laming Worthington Evans will preside. Two of the speakers, both of whom have suffered the loss of more than one limb and have "made good" in the face of incredible handicaps, will give demonstrations of what is possible with the simplest of artificial appliances. Interesting cinematograph films will be shown, and all discharged, disabled, and demobilised men will be heartily welcome; admission is free.

I am, Sir, yours faithfully,

(Mrs.) ETHEL M. WOOD,
Secretary, London War Pensions Committee.

Bloomsbury-square, W.C., July 16th, 1919.

SUPERANNUATION OF SCOTTISH POOR-LAW MEDICAL OFFICERS.

To the Editor of THE LANCET.

SIR,—A deputation will shortly wait on the Secretary for Scotland with the object of having the Scottish Poor-law medical officers placed on a similar footing as respects superannuation with their English and Irish brethren. The Poor-law medical officers of the Highlands and Islands who serve under the Highlands and Islands Medical Service Board stand on a different footing from other Scottish Poor-law medical officers, their returns from private practice being very small and their income being mainly derived from Government sources. It is therefore desirable for this group of Poor-law medical officers to come under a separate scheme of superannuation, similar to that which at present obtains in the case of medical officers serving in the Navy and regular Army. I am, Sir, yours faithfully,

July 16th, 1919. VOX.

ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—In the course of your article on this subject in THE LANCET of July 19th (p. 118) the following sentences occur:—

"Many observers are of the opinion that it is a disease allied to poliomyelitis; while *others*, mainly those who have made a special study of the history of the disease, incline to the view that encephalitis lethargica is associated in some intimate *causal* manner with influenza.[6] The *latter* point out that previous recorded epidemics of *lethargy* have been associated in point of *time* with epidemics of influenza, and *they suggest* that an attack of influenza either *predisposes* the patient to the lethargy or in some unexplained way *activates* the virus of lethargic encephalitis."

As the number (6) bears reference to an historical paper by myself, I have ventured to italicise several words, and will be obliged if you allow me the opportunity of saying (*a*) that I can myself form no idea of what is meant by the "view" that encephalitis lethargica is associated in some "intimate causal manner" with influenza; and (*b*) that I would be the last to claim credit for the amusing "predisposition" and "activation" hypotheses that someone has put forward in explanation of what is indisputable.

My belief is, simply, that no one who has studied the historical evidence can deny the "clinical affinities and epidemiological liaison between what we now call forms of epidemic encephalo-myelitis and meningitis ..... and the epidemic catarrhal fever, or influenza."[1]

It is, moreover, just those who have studied the historical as well as the clinical and pathological evidence who support the view that you have allowed me to put forward in your columns (May, 1918)—namely, that the epidemic of "encephalitis lethargica" last year was really a manifestation of Heine-Medin disease, or (to use the term which seems to give least offence) of epidemic encephalo-myelitis and meningitis, of which "acute anterior poliomyelitis" represents but a particular phase.

This view, as it appears from the special report of the Local Government Board on "encephalitis lethargica" (pp. 2 and 63), is substantially that held by Sir William Osler, and Dr. Draper of the U.S. Army—a fact which, rather singularly, has hitherto escaped comment.

I am, Sir, yours faithfully,

Wimpole-street, W., July 19th, 1919. F. G. CROOKSHANK.

[1] Proc. Roy. Soc. Med., 1919, vol. xii., Sect. Hist. Med.

The Services.

MENTIONED IN DESPATCHES.

The names of the following are amongst those mentioned for distinguished and gallant services in a very lengthy despatch received from the Commander-in-Chief of the British Forces in France, covering the period from Sept. 16th, 1918, to March 15th, 1919:—

Army Medical Service.—Col. J. D. Alexander, D.S.O.; Capt. (acting Maj.) T. H. Balfour, M.C.; Col. F. W. Begbie; Lt.-Col. (temp. Col.) W. Bennett, D.S.O.; Temp. Capt. (acting Major) W. S. S. Berry; Col. W. W. O. Beveridge, C.B., D.S.O.; Col. R. J. Blackham, C.M.G., C.I.E., D.S.O.; Lt.-Col. (acting Col.) W. R. Blackwell, C.M.G.; Capt. (acting Maj.) H. E. A. Boldero; Capt. and Bt. Maj. (acting Maj.) L. G. Bourdillon, D.S.O., M.C.; Lt.-Col. (temp. Col.) A. W. N. Bowen, D.S.O.; Lt.-Col. and Bt. Col. F. J. Brakenridge, C.M.G.; Col. H. A. Bray, C.M.G.; Temp. Capt. (acting Maj.) L. R. Broster; Maj. and Bt. Lt.-Col. C. G. Browne, D.S.O.; Lt.-Col. (temp. Col.) B. B. Burke, D.S.O.; Maj.-Gen. (temp. Lt.-Gen.) C. H. Burtchaell, K.C.B., C.M.G., K.H.S.; Lt.-Col. (temp. Col.) J. H. Campbell, D.S.O.; Maj.-Gen. H. Carr, C.B.; Col. J. Clay; Lt.-Col. (acting Col.) H. Collinson, C.M.G., D.S.O.; Maj. D. M. Corbett; Capt. (acting Maj.) W. V. Corbett; Capt. (acting Maj.) J. Dale; Lt.-Col. B. R. Dennis, O.B.E.; Lt.-Col. (acting Col.) T. F. Dewar, C.B., T.D.; Capt. (acting Maj.) R. F. O'T. Dickinson; Lt.-Col. and Bt. Col. (temp. Col.) H. E. M. Douglas, V.C., C.M.G., D.S.O.; Capt. (acting Maj.) C. R. Dudgeon, M.C.; Col. H. N. Dunn, C.M.G., D.S.O.; Maj. J. S. Dunne, D.S.O.; Lt.-Col. (temp. Col.) O. W. A. Eisner, D.S.O.; Lt.-Col. (temp. Col.) H. B. Fawcus, C.M.G., D.S.O.; Capt. (acting Major) A. McL. Ferrie, M.C.; Col. R. H. Firth, C.B.; Lt.-Col. (acting Col.) FitzG. G. Fitzgerald, D.S.O.; Lt.-Col. (temp. Col.) T. Fraser, D.S.O.; Capt. (acting Maj.) T. L. Fraser; Capt. (acting Maj.) R. Gale, D.S.O.; Lt.-Col. (temp. Col.) J. S. Gallie, C.M.G., D.S.O.; Maj.-Gen. J. J. Gerrard, C.B.; Col. T. W. Gibbard, C.B., K.H.S.; Capt. (acting Maj.) G. F. P. Gibbons; Capt. (acting Maj.) A. J. Gibson, D.S.O.; Lt.-Col. (acting Col.) G. M. Goldsmith; Col. H. W. Graham, D.S.O.; Capt. (acting Maj.) W. T. Hare, M.C.; Lt.-Col. (temp. Col.) J. A. Hartigan, C.M.G., D.S.O.; Capt. (acting Maj.) S. M. Hattersley, M.C.; Maj. A. H. Heslop, D.S.O.; Col. (temp. Maj.-Gen.) Sir S. Hickson, K.B.E., C.B., K.H.S. (R.P.); Maj. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C.; Lt.-Col. (acting Col.) C. H. Howkins, D.S.O.; Col. W. E. Hudleston, C.M.G., D.S.O.; Lt.-Col. (temp. Col.) L. Humphry, C.M.G.; Lt.-Col. (temp. Col.) D. O. Hyde, D.S.O.; Col. (temp. Maj.-Gen.) Sir J. M. Irwin, K.C.M.G., C.B.; Temp. Capt. (acting Maj.) F. P. Josselyne, M.C.; Col. F. Kelly, T.D.; Lt. (temp. Capt.) (acting Maj.) M. B. King, M.C.; Temp. Capt. (acting Maj.) C. Kingston; Capt. (acting Lt.-Col.) F. R. Laing; Maj. (acting Lt.-Col.) R. W. D. Leslie; Maj. (acting Col.) C. H. Lindsay, C.M.G., D.S.O.; Capt. (acting Maj.) D. C. Macdonald, M.C.; Lt.-Col. (temp. Col.) T. C. Macsenzie, D.S.O.; Lt.-Col. (acting Col.) A. M. MacLaughlin; Col. R. L. R. Macleod, C.B.; Capt. (acting Maj.) W. W. MacNaught, M.C.; Capt. (acting Maj.) E. B. Marsh, M.C.; Lt.-Col. (acting Col.) W. R. Matthews, D.S.O.; Lt.-Col. (temp. Col.) E. McDonnell, D.S.O.; Lt.-Col. (acting Col.) F. McLennan, D.S.O.; Capt. (acting Lt.-Col.) O. W. McSheehy, D.S.O.; Col. J. Meek, C.B.; Capt. (acting Maj.) K. A. Mills; Capt. (acting Maj.) J. M. Milne, M.C.; Lt.-Col. (acting Col.) E. C. Montgomery-Smith, D.S.O.; Col. F. J. Morgan, C.M.G.; Col. G. A. Moore, C.M.G., D.S.O.; Col. (temp. Maj.-Gen.) S. G. Moores, C.B., C.M.G.; Maj.-Gen. Sir M. W. O'Keeffe, K.C.M.G., C.B.; Capt. (acting Maj.) M. W. Paterson, M.C.; Col R. H. Penton, D.S.O.; Col. C. E. Pollock, D.S.O.; Lt.-Col. (temp. Col.) J. Powell, D.S.O.; Col. H. V. Prynne, D.S.O.; Maj. J. D. Richmond, D.S.O.; Maj. M. B. H. Ritchie, D.S.O.; Capt. (acting Maj.) R. L. Ritchie; Capt. (acting Maj.) A. L. Robertson; Capt. (acting Maj.) W. H. Rowell; Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) E. Ryan, C.M.G., D.S.O.; Lt.-Col. (temp. Col.) A. H. Safford; Lt.-Col. (temp. Col.) J. P. Silver, D.S.O.; Temp. Capt. (acting Maj.) G. W. Smith; Lt.-Col. S. B. Smith, D.S.O.; Col. J. C. B. Statham, C.M.G.; Lt.-Col. G. N. Stephen; Capt. (acting Maj.) A. D. Stirling, D.S.O.; Maj.-Gen. H. N. Thompson, C.B., C.M.G., D.S.O.; Maj.-Gen. J. Thomson, C.B.; Col. H. S. Thurston, C.B., C.M.G.; Capt. (acting Maj.) L. R. Tosswill (T.F.); Maj. (acting Lt.-Col.) W. P. Tyndale, C.M.G., D.S.O.; Temp. Capt. (acting Maj.) F. B. Winfield; Lt.-Col. (acting Col.) E. A. Wraith, D.S.O.

Consultants.—Col. H. A. Ballance, C.B.; Lt.-Col. S. G. Barling; Temp. Maj.-Gen. Sir A. A. Bowlby, K.C.M.G., K.C.V.O., C.B.; Temp. Maj.-Gen. Sir J. R. Bradford, K.C.M.G., C.B.; Temp. Col. W. P. S. Branson; Col. H. A. Bruce; Temp. Lt.-Col. H. Burrows, O.B.E.; Temp. Lt.-Col. R. H. Cooper; Col. S. L. Cummins, C.M.G.; Col. T. R. Elliott, D.S.O.; Temp. Col. C. H. S. Frankau, D.S.O.; Temp. Capt. (acting Lt.-Col.) F. Fraser; Maj. (temp. Lt.-Col.) A. M. H. Gray; Temp. Maj.-Gen. Sir W. P. Herringham, C.B.; Temp. Lt.-Col. G. M. Holmes, C.M.G.; Temp. Col. W. T. Lister, C.M.G.; Maj. (acting Lt.-Col.) H. MacCormac; Temp. Col. C. H. Miller; Temp. Col. W. Paterson, C.M.G.; Col. E. M. Pilcher, C.B., D.S.O.; Lt.-Col. W. Thorburn, C.B.; Temp. Maj.-Gen. C. S. Wallace, C.B., C.M.G.; Temp. Col. A. E. Webb-Johnson, D.S.O.

Royal Army Medical Corps.—Maj. (temp. Lt.-Col.) D. Ahern, D.S.O.; Maj. (acting Lt.-Col.) R. B. Ainsworth, D.S.O.; Temp. Capt. (acting Maj.) R. C. Alexander; Temp. Capt. F. J. Allen, M.C.; Temp. Capt. T. S. Allen; Capt. (acting Maj.) W. B. Allen, V.C., D.S.O., M.C.; Maj. A. C. Amy, D.S.O.; Temp. Capt. (acting Maj.) J. R. Anderson; Temp. Capt. W. Anderson; Temp. Capt. (acting Maj.) W. B. G. Angus, M.C.; Lt.-Col. M. H. Babington, D.S.O.; Temp. Capt. L. W. Bain, M.C.; Maj. J. H. Barbour; Temp. Capt. E. F. Bashford; Lt.-Col. (temp. Col.) H. R. Bateman, D.S.O.; Temp. Capt. (acting Maj.) F. G. Bell, M.C.; Maj. (acting Lt.-Col.) W. J. E. Bell, D.S.O.; Temp. Capt. G. W. Beresford; Capt. A. W. Bevis; Capt. (acting Lt.-Col.) F. E. Bissell; Temp. Capt. G. W. Bissett; Temp. Capt. (acting Maj.) P. L. Blaber; Maj. R. B. Black, D.S.O. (R. of O.); Temp. Capt. E. W. Blake; Capt. and Bt. Maj. (acting Lt.-Col.) H. H. Blake; Temp. Capt. V. H. Blake; Capt. (acting Lt.-Col.) J. D. Bowle, D.S.O.; Temp. Capt. C. E. Boyce; Maj. (acting Lt.-Col.) W. W. Boyce, D.S.O.; Temp. Capt. A. B. Brook; Temp. Maj. H. W. Bruce; Maj. (acting Lt.-Col.) J. C. G. Carmichael; Temp. Capt. (acting Maj.) A. M. Caverhill; Capt. (acting Lt.-Col.) C. Clarke, D.S.O.; Temp. Capt. (acting Maj.) G. Clarke; Temp. Capt. H. E. Clutterbuck; Maj. (acting Lt.-Col.) T. S. Coates, O.B.E.; Capt. (temp. Maj.) F. E. Collard; Temp. Capt. (acting Maj.) J. R. Collins; Temp. Capt. C. G. Colyer; Temp. Capt. (acting Maj.) J. D. Cooke; Temp. Capt. (acting Maj.) R. C. Cooke, D.S.O., M.C.; Col. R. J. Copeland; Temp. Capt. W. J. Corbett; Temp. Capt. C. C. C. Court; Temp. Capt. J. Coutts; Temp. Hon. Maj. E. G. Crabtree; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) B. A. Craig; Temp. Capt. J. G. Craig; Temp. Capt. W. Craig; Maj. (acting Lt.-Col.) J. M. M. Crawford; Temp. Hon. Maj. B. Crothers; Temp. Capt. J. Cruickshank; Temp. Capt. A. J. W. Cunningham; Maj. J. F. Cunningham; Temp. Capt. W. B. Dalgleish; Temp. Qrmr. and Lt. G. J. Darke; Temp. Capt. (acting Lt.-Col.) H. S. Davidson; Temp. Capt. H. R. Davies; Capt. (acting Lt.-Col.) R. M. Davies; Temp. Capt. S. T. Davies; Temp. Capt. G. de H. Dawson, M.C.; Temp. Capt. (acting Maj.) W. Deane; Maj. (acting Lt.-Col.) G. De la Cour; Temp. Capt. A. W. Dennis; Temp. Capt. E. R. Dermer; Temp. Capt. R. S. Dobbin; Temp. Capt. (acting Maj.) A. W. H. Donaldson; Lt.-Col. C. G. Douglas, M.C.; Maj. J. H. Douglass; Maj. (acting Lt.-Col.) C. M. Drew; Temp. Hon. Lt.-Col. G. Dreyer; Temp. Capt. J. D. Driverg, M.C.; Temp. Capt. C. E. Dukes; Temp. Capt. (acting Maj.) J. G. Duncanson; Temp. Capt. E. C. Dutton; Temp. Capt. H. H. Elliot, M.C.; Maj. (acting Lt.-Col.) A. C. Elliott; Temp. Capt. C. M. G. Elliott; Capt. (acting Maj.) R. Ellis, M.C.; Maj. (acting Lt.-Col.) H. H. A. Emerson, D.S.O.; Lt.-Col. and Bt. Col. (temp. Col.) H. Esser, C.M.G., D.S.O.; Lt.-Col. (acting Col.) C. R. Evans, D.S.O.; Temp. Capt. M. du B. Ferguson; Maj. (acting Lt.-Col.) E. G. Firench; Temp. Capt. G. Fildes; Temp. Hon. Capt. E. S. Fish; Temp. Capt. A. Fleming; Capt. (acting Lt.-Col.) J. H. Fletcher, D.S.O., M.C.; Maj. (acting Lt.-Col.) A. D. Fraser, D.S.O., M.C.; Temp. Capt. J. E. Frere; Temp. Capt. T. F. S. Fulton; Temp. Capt. (acting Maj.) H. W. Gabe; Capt. (acting Lt.-Col.) R. W. Galloway; Temp. Capt. G. C. Gell; Temp. Capt. (acting Maj.) W. E. Gemmell; Capt. (acting Maj.) C. de W. Gibb; Capt. and Bt. Maj. H. G. Gibson; Temp. Capt. E. C. Girling; Temp. Capt. S. R. Gleed (T.F.); Temp. Capt. (acting Maj.) B. Goodman; Lt.-Col. (acting Col.) W. R. P. Goodwin, D.S.O.; Temp. Capt. C. B. Goulden; Maj. (acting Lt.-Col.) A. C. H. Gray; Temp. Maj. K. E. L. G. Gunn; Capt. (acting Lt.-Col.) H. A. Harbison, M.C.; Temp. Capt. T. H. Harker; Temp. Capt. D. T. Harris; Temp. Capt. J. N. J. Hartley; Maj. (acting Lt.-Col.) W. J. S. Harvey, D.S.O.; Temp. Capt. T. A. Hawkesworth; Lt.-Col. E. C. Hayes; Temp. Capt. E. D. F. Hayes; Maj. (acting Lt.-Col.) A. F. Heaton (R. of O.); Temp. Capt. A. G. Henderson; Capt. (acting Maj.) R. A. Hepple, M.C.; Temp. Capt. W. Herbertson; Temp. Capt. E. Hesterlow; Temp. Capt. (acting Maj.) T. T. Higgins; Temp. Capt. R. McC. Hill, D.S.O.; Temp. Capt. (acting Lt.-Col.) G. D. Hindley, M.C.; Temp. Capt. A. N. Hooper; Temp. Hon. Maj. C. W. M. Hope; Temp. Capt. E. I. Horsburg; Temp. Hon. Maj. T. Houston; Capt. (acting Lt.-Col.) I. R. Hunterton; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) G. W. G. Hughes, D.S.O.; Lt.-Col. E. T. Inkson, V.C., D.S.O.; Temp. Capt. (acting Maj.) J. W. Innes; Temp. Lt.-Col. G. S. Jackson, D.S.O., T.D.; Temp. Capt. C. W. W. James; Lt.-Col. J. C. Jameson; Temp. Capt. J. G. Johnstone; Temp. Capt. (acting Maj.) A. C. Keep, M.C.; Temp. Hon. Maj. R. F. Kennedy; Capt. (acting Maj.) G. L. Keynes; Temp. Capt. C. King; Temp. Maj. C. F. Knight, D.S.O.; Temp. Hon. Maj. L. F. Knuthsen; Capt. (acting Lt.-Col.) E. C. Lang, D.S.O.; Capt. (acting Lt.-Col.) H. H. Leeson, M.C.; Temp. Capt. T. P. Lewis; Temp. Capt. (acting Maj.) S. J. L. Lindeman, M.C.; Temp. Capt. (acting Maj.) E. C. Lindsay; Temp. Capt. W. S. Lindsay; Temp. Capt. P. C. Litchfield, M.C.; Temp. Capt. J. S. Lloyd; Temp. Capt. (acting Maj.) A. L. Lockwood, D.S.O., M.C.; Temp. Maj. (acting Lt.-Col.) C. E. M. Lowe; Temp. Capt. N. P. L. Lumb; Temp. Capt. F. C. MacDonald; Maj. (acting Lt.-Col.) W. MacD. Macdowall; Temp. Capt. W. MacEwen; Temp. Capt. (acting Maj.) R. B. Macfie; Temp. Capt. (acting Maj.) C. Mackenzie; Maj. (acting Lt.-Col.) D. F. Mackenzie, D.S.O.; Temp. Capt. D. Mackinnon; Temp. Capt. J. W. MacLeod, O.B.E.; Temp. Capt. A. S. L. Malcolm; Temp. Capt. E. C. Malden; Temp. Capt. A. C. Mann, M.C.; Temp. Capt. (acting Maj.) F. B. Manser; Maj. (acting Lt.-Col.) P. J. Marett; Temp. Capt. O. de B. Marsh; Temp. Capt. R. P. Marshall; Temp. Capt. (acting Maj.) W. S. Martin, M.C.; Temp. Capt. (acting Maj.) R. Massie; Temp. Capt. H. N. Matthews; Temp. Capt. O. S. Maunsell; Capt. (acting Maj.) C. A. R. McCay; Temp. Lieut. T. McLaren; Temp. Capt. G. McLeod, M.C.; Temp. Capt. D. McNeill; Temp. Capt. J. P. McVey, M.C.; Maj. A. A. Measden, D.S.O.; Lt.-Col. T. I. N. Mears, D.S.O.; Temp. Capt. C. H. Medlock; Temp. Capt. A. U. Millar, M.C.; Temp. Capt. H. C. D. Miller; Temp. Capt. E. T. C. Milligan; Temp. Capt. J. H. Moir, D.S.O., M.C.; Capt. (acting Lt.-Col.) H. G. Monteith, D.S.O.; Temp. Capt. A. T. Moon; Maj. E. H. M. Moore, D.S.O.; Capt. (acting Maj.) J. Y. Moore; Temp. Capt. R. F. Moore; Maj. (acting Lt.-Col.) C. R. M. Morris, D.S.O.; Temp. Capt. (acting Maj.) J. Morrison; Temp. Capt. J. T. Morrison; Temp. Capt. H. H. P. Morton; Temp. Capt. (acting Maj.) F. H. Moxon; Capt. W. P. Mulligan, O.B.E.; Lt.-Col. C. D. Myles, O.B.E.; Temp. Capt. F. L. Napier; Temp. Capt. G. L. Neil; Maj. (acting Lt.-Col.) R. E. U. Newman, M.C.; Capt. (acting Maj.) C. V. Nicoll; Temp. Capt. (acting Maj.) A. A. O'Connor; Lt.-Col. C. J. O'Gorman, D.S.O.; Maj. (acting Lt.-Col.) D. de C. O'Grady; Temp. Capt. M. W. B. Oliver; Temp. Capt. H. B. Owens; Maj. (acting Lt.-Col.) G. R. 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Rudkin, D.S.O.; Temp. Capt. (acting Maj.) J. C. Sale, D.S.O., M.C.; Maj. (temp. Lt.-Col.) F. C. Sampson, D.S.O.; Temp. Capt. (acting Maj.) H. H. Sampson, M.C.; Temp. Capt. (acting Maj.) H. W. Seawin; Temp. Capt. A. Scott; Temp. Capt. (acting Maj.) E. J. Selby; Temp. Capt. H. P. Shackleton; Temp. Capt. W. Shanks; Temp. Hon. Maj. G. C. Shattuck; Temp. Capt. H. L. Shelton; Temp. Capt. H. J. Shone; Maj. (acting Lt.-Col.) H. C. Sidgwick; Lt.-Col. (acting Col.) H. Simson; Temp. Capt. A. F. S. Sladden; Temp. Capt. J. M. Smeaton; Capt. (acting Lt.-Col.) J. C. Sproule; Temp. Capt. C. M. Stallard; Temp. Capt. (acting Maj.) E. G. Stanley, Temp. Maj. F. N. G. Starr; Temp. Capt. R. S. S. Stanham; Temp. Capt. W. Stirling; Temp. Capt. A. Stokes, D.S.O.; Temp. Capt. (acting Lt.-Col.) H. Stokes; Temp. Capt. C. P. A. Scranaghan; Capt. (acting Lt.-Col.) J. W. C. Stubbs, M.C.; Temp. Capt. E. J. Stuckey; Temp. Capt. (acting Maj.) C. Sullivan; Maj. (acting Lt.-Col.) G. G. Tabuteau, D.S.O.; Temp Capt. R. J. Tait; Temp. Capt. (acting Maj.) D. C. Taylor, M.C.; Temp. Maj. G. Taylor; Lt.-Col. (temp. Col.) W. Taylor; Temp. Capt. L. H. Terry; Maj. (acting Lt.-Col.) W. I. Thompson, D.S.O.; Temp. Capt. (acting Lt. Col.) F. R. Thornton, M.C.; Temp. Capt. (acting Maj.) R. Tindall, M.C.; Temp. Capt. (acting Maj.) A. T. Todd; Temp. Capt. R. S. Topham; Temp. Capt. R. H. Tribe, M.C.; Temp. Capt. C. N. Valsey; Capt. (acting Maj.) B. Varvill, M.C.; Temp. Capt. (acting Maj.) P. N. Vellacott; Temp. Capt. (acting Maj.) H. M. Vickers; Capt. F. S. Walker; Temp. Capt. J. C. Walker; Temp. Capt. A. B. Walker; Temp. Capt. (acting Maj.) H. H. Warren; Maj. (acting Lt.-Col.) W. J. Waters; Temp. Capt. E. J. M. Watson; Temp. Capt. (acting Maj.) H. C. Watson, M.C.; Capt. (acting Lt.-Col.) L. F. K. Way; Temp. Capt. F. E. Webb; Temp. Capt. (acting Maj.) F. W. Wesley; Temp. Capt. F. Whitby; Maj. C. F. White; Temp. Capt. M. H. Whiting; Temp. Capt. A. R. Wightman; Maj. (temp. Lt.-Col.) A. J. Williamson; Temp. Capt. J. Williamson; Temp. Capt. G. R. Wilson; Temp. Capt. J. A. Wilson; Temp. Capt. F. A. Winder; Maj. J. L. Wood; Temp. Capt. (acting Maj.) P. R. Woodhouse, D.S.O., M.C.; Temp. Capt. E. W. N. Wooler; Temp. Capt. H. Yellowlees; Temp. Capt. C. R. Young, D.S.O., M.C.

Royal Army Medical Corps (S.R.).—Capt. (acting Maj.) S. R. Armstrong; Capt. (acting Maj.) R. G. Battersby; Capt. H. C. Bazett, M.C.; Capt. E. Bramley; Capt. J. L. D. Buxton; Capt. (acting Maj.) T. W. Clarke, M.C.; Capt. W. H. Cornellus; Capt. W. J. F. Craig; Capt. F. A. Duffield; Capt. (acting Maj.) F. G. Foster; Capt. (acting Lt.-Col.) W. R. Gardner, D.S.O.; Capt. (acting Maj.) A. J. Gilchrist, M.C.; Capt. (acting Maj.) B. Goldsmith; Capt. (acting Lt.-Col.) C. N. Gover, M.C.; Lt. G. N. Groves; Capt. M. St. C. Hamilton; Capt. (acting Maj.) R. L. Horton; Capt. F. Jefferson; Capt. J. L. Kilbride; Capt. (acting Maj.) D. M. Marr; Capt. (acting Maj.) G. Marshall; Capt. (acting Lt.-Col.) W. H. L. McCarthy, D.S.O., M.C.; Capt. D. Mitchell; Capt. M. K. Nelson; Capt. (acting Maj.) H. D. Rollinson; Capt. (acting Maj.) A. F. L. Shields; Capt. (acting Maj.) G. H. Stevenson, M.C.; Capt. (acting Maj.) L. S. B. Tasker, M.C.; Capt. (acting Maj.) J. Walker, M.C.; Capt. (acting Maj.) W. J. Webster, M.C.; Capt. (acting Maj.) A. Wilson, M.C.; Capt. T. Wilson.

Royal Army Medical Corps (T.F.).—Capt. G. W. McB. Andrew; Maj. (acting Lt.-Col.) W. Archibald; Capt. R. A. Askins; Maj. A. Ayre-Smith; Capt. (acting Maj.) H. T. Bates; Capt. (acting Lt.-Col.) A. Baxter; Capt. W. F. B. Bensted-Smith; Maj. (acting Lt.-Col.) G. N. Biggs; Capt. (acting Maj.) E. J. Boome; Capt. A. M. Brown; Qrmr. and Lt. H. M. Browne; Capt. (acting Lt.-Col.) J. Bruce; Capt. (acting Lt.-Col.) H. N. Burroughes; Lt.-Col. and Bt. Col. J. P. Bush, C.M.G.; Lt.-Col. E. M. Callender, T.D.; Maj. (acting Lt.-Col.) D. G. Campbell; Maj. (acting Lt. Col.) T. M. Carter; Capt. R. C. Clarke; Capt. (acting Maj.) T. C. Clarke, M.C.; Capt. (acting Maj.) F. Clayton; Capt. L. Colledge; Capt. D. R. Cramb; Capt. (acting Maj.) C. H. Crawshaw; Capt. J. D. Davidson; Capt. (acting Maj.) R. G. Dixon; Capt. (acting Maj.) G. W. Deeping; Capt. A. D. Downes; Lt.-Col. A. D. Ducat, T.D.; Maj. J. M. Duncan; Capt. (acting Lt.-Col.) W. Duncan; Capt. (acting Maj.) J. F. Edmiston; Maj. A. Elliott; Lt.-Col. C. I. Ellis, C.M.G.; Capt. (acting Maj.) R. Ellis, M.C.; Capt. (acting Maj.) J. Everidge; Maj. A. H. Falkner; Capt. H. N. Fletcher; Capt. C. Forbes; Maj. M. G. Foster; Capt. (acting Maj.) C. J. Fox; Capt. (acting Lt.-Col.) J. H. F. Fraser, M.C.; Maj. W. H. Galloway; Capt. (acting Maj.) H. J. Gorrie; Maj. (acting Lt.-Col.) D. J. Graham; Lt.-Col. A. G. Hamilton; Capt. F. G. Harper, M.C.; Lt.-Col. J. R. Harper, T.D.; Capt. L. Hawkes; Capt. W. R. H. Heddy; Capt. (acting Maj.) R. Henry; Lt.-Col. (acting Col.) F. W. Higgs; Capt. W. H. Hill; Capt. (acting Maj.) S. J. C. Holden; Capt. (acting Maj.) A. J. Jex-Blake; Maj. (acting Lt.-Col.) F. W. Johnson; Capt. W. Johnstone; Capt. (acting Lt.-Col.) E. Knight; Capt. R. A. Lennie; Capt. (acting Lt.-Col.) A. W. E. Loudon; Capt. G. E. Loveday; Capt. (acting Maj.) H. A. Lucas; Capt. (acting Maj.) A. M. Mackay; Capt. (acting Maj.) H. A. Macmillan, M.C.; Capt. (acting Maj.) I. C. Marshall; Maj. C. J. Martin; Capt. G. E. Martin; Maj. S. Martyn; Capt. E. R. Matthews; Capt. (temp. Lt.-Col.) G. K. Maurice, M.C.; Capt. (acting Lt.-Col.) A. C. H. McCullugh; Capt. (acting Maj.) W. G. McKenzie, M.C.; Capt. J. C. W. Methven; Capt. (acting Lt.-Col.) J. Miller, M.C.; Capt. (acting Maj.) J. Morham; Qrmr. and Lt. F. W. Newboult; Maj. D. C. L. Orton; Capt. (acting Maj.) W. R. Pierce; Capt. E. B. Pike; Maj. (acting Lt.-Col.) A. J. D. Riddett; Maj. (acting Lt.-Col.) H. B. Roderick; Capt. (acting Lt. Col.) P. T. Rutherford; Capt. (acting Maj.) C. F. M. Saint; Capt. (acting Lt.-Col.) D. J. Scott, M.C.; Lt.-Col. G. C. E. Simpson; Capt. (acting Lt.-Col.) W. Simpson; Capt. T. S. Slessor; Capt. T. H. Somervell; Capt. R. W. E. Stiesings; Capt. (acting Maj.) W. Stobie; Capt. (acting Maj.) R. W. Swayne; Capt. (acting Maj.) E. S. Taylor; Capt. (acting Maj.) A. G. G. Thompson; Maj. (acting Lt.-Col.) W. A. Thompson; Capt. W. S. Tresawna; Capt. (acting Maj.) C. A. Webster; Lt.-Col. and Bt. Col. F. H. Westmacott; Capt. (acting Maj.) K. D. Wilkinson; Capt. (acting Maj.) F. E. Withers; Capt. J. M. Wyatt; Capt. (acting Maj.) A. L. Yates, M.C.

Canadian Army Medical Corps.—Capt. W. F. Abbott, M.C.; Capt. (acting Maj.) M. H. Allen; Lt.-Col. W. H. K. Anderson, D.S.O.

Maj. (acting Lt.-Col.) W. A. G. Bauld, D.S.O.; Maj. (acting Lt.-Col.) A. E. H. Bennett; Capt. H. Black; Lt.-Col. G. J. Boyce, D.S.O.; Capt. R. S. R. Carruthers; Capt. H. E. Connolly; Capt. C. K. Dowson; Col. L. Drum; Col. J. M. Elder, C.M.G.; Maj. A. W. M. Ellis; Capt. J. M. Fowler; Maj. G. W. Hall, D.S.O.; Maj. (acting Lt.-Col.) R. H. M. Hardisty, M.C.; Lt.-Col. E. V. Hogan; Maj. K. E. Hollis; Maj. A. L. Jones, M.C.; Capt. (acting Maj.) L. F. Jones; Lt.-Col. D. P. Kappele, D.S.O.; Maj. B. E. Kelly, D.S.O.; Lt.-Col. T. M. Leask, D.S.O.; Maj. A. F. Macaulay; Lt.-Col. R. H. Macdonald, M.C.; Maj. J. A. MacMillan; Capt. D. C. Malcolm, M.C.; Capt. J. F. S. Marshall, M.C.; Capt. H. W. Martin; Capt. R. B. Mitchell; Lt.-Col. H. E. Munroe, O.B.E.; Maj. E. A. Neff; Capt. J. I. O'Connell; Capt. G. P. Parker; Maj. S. Paulin, D.S.O.; Col. C. A. Peters, D.S.O.; Maj. (acting Lt.-Col.) G. A. Platt; Lt.-Col. C. H. Reason, D.S.O.; Capt. J. W. Reynolds; Capt. W. A. Richardson; Maj. R. B. Robertson; Brig.-Gen. A. E. Ross, C.B., C.M.G.; Maj. (acting Lt.-Col.) E. R. Selby; Col. R. M. Simpson, D.S.O.; Maj. P. D. Stewart; Maj. S. J. Streight; Lt.-Col. (acting Col.) C. P. Templeton, D.S.O.; Maj. G. W. Treleaven, D.S.O., M.C.; Capt. J. C. Tull; Maj. W. H. Tytler; Capt. H. L. Walker; Maj. E. L. Warner.

Australian Army Medical Corps.—Lt.-Col. J. K. Adey, O.B.E.; Col. G. W. Barber, C.M.G., D.S.O.; Capt. B. McN. Beith; Capt. (temp. Maj.) G. Bell; Maj. J. C. Campbell, D.S.O.; Maj. L. R. Cook; Maj. D. D. Coutts, D.S.O.; Maj. R. F. Craig, D.S.O.; Maj. A. S. Curtin; Col. M. H. Downey, D.S.O.; Maj. A. P. Drummond; Col. T. P. Dunhill; Lt.-Col. and Bt. Col. W. L. E. Eames, C.B.; Maj. J. W. Farrar; Lt.-Col. P. Fuschi; Capt. H. W. Franklands; Lt.-Col. A. H. Gibson; Capt. J. W. Grieve; Maj. (temp. Lt.-Col.) J. A. James; Maj. D. H. B. Lawton; Lt.-Col. H. B. Lewers, O.B.E.; Capt. E. I. Littlejohn; Col. F. A. Maguire, D.S.O.; Col. A. H. Marks, D.S.O.; Maj. L. May, D.S.O., M.C.; Capt. A. L. McLean, M.C.; Capt. F. Meldrum; Maj. (temp. Lt.-Col.) J. R. Muirhead; Maj. R. B. Norths; Capt. P. J. F. O'Shea, D.S.O., M.C.; Capt. C. A. Oxley; Capt. R. I. Park; Col. A. E. Shepherd, D.S.O.; Maj. J. S. Smyth; Maj. M. V. Southey; Maj. (temp. Lt.-Col.) V. O. Stacy; Lt.-Col. C. W. Thompson; Capt. W. J. Trewhella; Maj. C. T. Turner; Maj. F. T. Wheatland; Maj. K. M. Whiting; Maj. H. H. Willis; Lt.-Col. F. C. Wooster.

New Zealand Medical Corps.—Capt. P. A. Ardagh, D.S.O., M.C.; Maj. F. T. Bowerbank; Capt. E. M. Finlayson; Capt. P. G. Horsburgh; Maj. (temp. Lt.-Col.) P. J. Jory; Capt. J. Mitchell; Lt.-Col. J. H. Neil, D.S.O.

South African Medical Corps.—Capt. J. Drummond; Capt. W. L. Gordon; Lt.-Col. G. R. Thomson; Lt.-Col. G. H. Usmar.

American Expeditionary Force Medical Corps.—Capt. G. R. Curl; 1st Lt. C. E. Hamilton; 1st Lt. S. B. Hinton; Lt. D. W. Kramer; Capt. L. Little; Lt. H. W. Mahon; 1st Lt. J. McCall; 1st Lt. A. W. Thomas; Lt. J. C. Willis; Mr. H. W. Marsh, Harvard Unit.

British Red Cross Society.—Temp. Hon. Capt. D. H. D. Cran; Dr. J. Stewart.

Civilian.—Dr. A. H. Fardon.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. A. Shaw (retired) to be Surgeon Captain (retired) in recognition of services rendered during the war.

Surg. Lieut.-Comdr. F. C. Alton is placed on the Retired List.

E. Granger to be temporary Surgeon Lieutenant.

Temp. Surg. Lieut. G. Aubrey is transferred to permanent list of Surgeon Lieutenants.

ARMY MEDICAL SERVICE.

Temp. Major-Gen. Sir B. E. Dawson, G.C.V.O., C.B. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

Temp. Cols. J. H. Parsons, C.B.E., and R. Davies-Colley relinquish their commission and retain the rank of Colonel.

Col. C. C. Reilly, C.B., is placed on retired pay.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. FitzG. G. Fitzgerald, D.S.O., relinquishes the acting rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Majors J. E. Carter, A. E. S. Irvine; Temp. Major A. F. Hurst.

The undermentioned to be acting Lieutenant-Colonels whilst specially employed: Major E. C. Phelan; Temp. Major C. E. Ligertwood; Capt. R. M. Dickson.

The undermentioned relinquish the acting rank of Major: Capts. C. T. V. Benson, E. G. H. Cowen; Temp. Hon. Capt. O. H. Sansneld; Temp. Capts. C. M. Kennedy, G. R. E. Colquhoun, A. G. McLeod, N. M. Grace, P. W. Dove, R. M. Fenn, R. Edwards, W. J. D. Bromley, W. F. Dunlop, J. E. Power, C. Clyne, P. L. Hope, J. W. Applegate, G. S. Mill, G. J. Arnold, F. J. Thorne, B. Sweeten, N. F. Norman, A. C. Parsons, C. C. Lord, R. E. F. Pearse, P. A. Leighton, A. E. Seiler, J. V. Bates, R. R. Wallace, H. T. Mant, W. T. Hedley, M. McLeod, B. Hart, F. E. Fielden, A. Dingwall-Fordyce, G. T. Gifford, G. H. Darlington, W. A. Wheeldon, J. F. Venables, J. P. Lowson, A. E. Marsack, G. A. Skinner.

To be acting Majors: Capt. and Bt. Major J. D. Kidd; Capt. C. E. L. Harding; Temp. Capts. H. H. Dummere, A. L. Lockwood, R. K. Robertson, W. C. Sharpe, A. Grant, C. B. Tudehope.

Officers relinquishing their commissions:—Temp. Capt. J. G. Johnston (granted the rank of Lieutenant-Colonel). Temporary Captains granted the rank of Major: J. E. Power, R. B. Blair, A. Grant, J. Alexander, R. Felton, N. F. Norman, J. E. Davies, P. W. Dove, H. B. Day. Temporary Captains retaining the rank of Captain: W. J. Nisbet, J. A. Delmege, T. W. Heywood, T. J. Lyons, S. G. Billington, J. A. MacLeod, G. N. Montgomery, C. M. Forster, E. C. Myott, H. Cardin, H. Alnscow, F. W. Daniels, A. Evans, G. B. Charnock, J. H. McAllum, J. S. Bookless, D. Fisher, H. C. D. Miller, J. P. MacDonald, T. R. Phipps, A. C. Major, J. B. Fairclough, W. Leggett, J. A. N. Scott, J. T. Bowman, A. Davies, J. N. L. Thoseby, T. W. R. Strode, L. R. King, H. A. Ronn, E. P. H. Vickery, H. Mohan, B. E. A. Batt, S. P. Bedson, A. G. Winter, P. L. T. Bennett, J. B. Hunter, J. S. Coldwell, W. A. L. Dunlop, A. W. Gill, F. C. Macdonald, E. L. Steele, M. J. Macauley, H. E. M. Baylis, M. F. Emrys-Jones, J. MacKinnon, A. S. Holden, G. Fleming, R. Stipe, J. A. R. Wells, J. W. Pell, A. C. Parsons, R. L. Bell, R. M. Rowe, J. E. T. Jones, F. Corner, J. W. Coulter, A. Topping, D. J. Evans, W. F. Dunlop, F. D. Walker, J. P. Brennan, T. C. Findlater, F. W. Hayes, W. M. T. Wilson, S. P. Rea, J. G. Willmore, W. D. Wilkins, R. W. Russell-Jones, W. J. Spearing, J. M. Adams, S. M. Vassallo, S. D. Adam, R. R. Arcnibald, C. S. Tennant, F. M. Gardner-Medwin, D. H. Jones, C. D. Kean, C. Harris, B. W. Wibberley, R. W. L. Wallace.

Canadian Army Medical Corps.

Temp. Major W. J. McAlister, M.C., to be acting Lieutenant-Colonel while employed in command of C.C.O.H., Matlock Bath.

Temp. Capt. (acting Major) J. A. M. Hemmeon retains the acting rank of Major.

Temporary Captains (acting Majors) relinquishing the acting rank of Major: J. S. Hutson, T. W. Sutherland.

Temp. Lieut. L. G. Hillier to be temporary Captain.

Canadian Army Dental Corps.

H. Jackson, Canadian Forestry Corps, to be temporary Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Capts. C. S. Staddon and J. D. Dickson relinquish the acting rank of Major.

TERRITORIAL FORCE.

Major (acting Lieut.-Col.) T. A. Barron relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Captains (acting Lieutenant-Colonels) relinquishing the acting rank of Lieutenant-Colonel on ceasing to be employed: G. C. E. Simpson, R. A. Stark.

Capt. (acting Major) C. B. Baxter, O.B.E., to be Major.

Capt. H. J. A. Longmore to be acting Major whilst specially employed.

Captains (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: H. J. A. Longmore, C. E. W. McDonald, H. M. Calder, C. Burrows, W. J. Hirst, T. W. H. Downes.

2nd London General Hospital: Lieut.-Col. (Hon. Major-Gen.) Sir G. H. Makins, G.C.M.G., C.B., is retired, having attained the age limit.

2nd Eastern General Hospital: Capt. H. Gervis is restored to the establishment.

1st Southern General Hospital: Lieut.-Col. H. G. Barling, C.B., is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service. Capt. (acting Major) A. R. Bearn relinquishes the acting rank of Major on ceasing to be specially employed.

2nd Southern General Hospital: Major J. Swain is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

3rd Scottish General Hospital: Lieut.-Col. A. G. Hay is restored to the establishment.

ROYAL AIR FORCE.

Medical Branch.—Major F. H. Stephens (Staff Surgeon, R.N.) relinquishes his commission on reverting to R.N. Medical Services.

The undermentioned are transferred to unemployed list: Capt. N. F. Stallard; Lieuts. E. S. Sharpe, R. W. Stephenson, N. C. Cooper.

INDIAN MEDICAL SERVICE.

Col. W. E. Jennings to be Major-General.

Temporary Lieutenants to be temporary Captains: E. T. N. Taylor, Govind Shivram Mandlik, Har Gobind Dayal Mathur, Ram Narain Sud, Jehangir Cursetji Bharucha, Sher Singh, Hirnaya Kumar Sen, Shapoor Dinsha Vania, Peruvemba Ayyasami Acyer Ramanathan, Kshetra Mohan Ray, Satindra Chandra Basu, Bidhu Bhushan Chatterjee, Padmanabha Rangappa Bhandarkar, Raghupati Banerji, Kaikhu-roo Rustomji Dalal, Susanta Kumar Sen, Kantilal Kalynji Mankodi, Suresh Chandra Sarkar, Amar Nath Madnok, Hantwall Shankar Rau, Gopal Krishna Ramrao Padbidri, Paskal De Souza, Jehangir Hormasji Clarke, Keralapuram Sreenevasa Subramanyam, Duriseti Narayanarao.

Indian Defence Force (Medical Corps).

Temporary rank has been granted as follows:—To be Lieutenant-Colonel: E. A. C. Hindmarsh. To be Captains: J. H. Sheldon, W. R. Taylor. To be Lieutenant: Satish Chandra Ghosh.

Capt. Radha Madhab Prasad relinquishes his temporary rank.

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WILLIAMS AND NORGATE, London.
Problems of Life. By Rev. R. J. Campbell. Pp. 217. 5s.

Messrs. H. K. Lewis and Co., Ltd., have removed their publishing, wholesale, and advertisement departments to 28, Gower-place, W.C.1. The change should provide more convenient accommodation for publishing work, while the space vacated in the old premises will afford additional room for the library, to which a new reading room will be added.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, JULY 15TH.

Public Health Propaganda.

To a written question if he would appoint a publicity committee to consider how best by posters, leaflets, lectures, and other means to educate the nation in the principles of health, Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The Minister of Health has recently appointed a Committee to advise him on the dissemination of information in regard to housing, whether by the means indicated in the question or otherwise. I will send the honourable Member the names of the Members and the terms of reference to the Committee. My right honourable friend proposes to await their advice before proceeding to consider the question of publicity in relation to other problems affecting health.

WEDNESDAY, JULY 16TH.

Dental Reform.

Mr. JESSON asked the Minister of Health whether an amending Bill to the Dentists Act, 1878, was in course of preparation; if so, whether this Bill would appoint, in accordance with the recommendations of the Departmental Committee of Dentistry, an ad hoc Committee to inquire into the eligibility of unregistered dentists for registration; whether the personnel of this ad hoc Committee had already been decided upon; whether the Incorporated Dental Society, Ltd., would have representatives upon it, and how many; and whether he could state why the National Dental Association, an organisation which represented at the present moment over 800 unregistered dental practitioners, who each, by the terms of his agreement with the association on assuming membership, undertook not to canvass or advertise for patients, and made a declaration that he had been in practice for a period of five years as a dental assistant or practitioner wholly engaged in operations on the mouth before Feb. 5th, 1919, had not been accorded equality of treatment with the Incorporated Dental Society, Ltd.—Dr. ADDISON replied: No, Sir; most of the proposals referred to in the Report of the Committee must form part of the general scheme for improved health services for the nation which the Ministry of Health are concerned to develop as soon as possible, but there has not yet been sufficient time to work out such a scheme, nor to consider adequately the various recommendations of the Committee in question as regards dental registration. The other points in the question, therefore, do not arise.

THURSDAY, JULY 17TH.

Paddington Military Hospital.

Captain WEDGWOOD BENN asked the Secretary for War whether he was aware that upwards of 500 wounded men, the majority of whom were cases that had lost one or more limbs, had recently been transferred from various military hospitals, in particular from the King George Hospital, to the Paddington Military Hospital, in the Harrow-road; whether he was aware that the Paddington Military Hospital, a converted workhouse, was quite unsuited for the reception of such cases both by construction and situation.—Mr. CHURCHILL replied: Complaint has been made, especially regarding the situation of this hospital, and for some time past endeavours have been made to obtain another suitable building, but, I regret to say, so far without success. I hope, however, that arrangements may be made to enable the hospital to be vacated within the next few weeks.

Disturbance of Military Patients.

Major GLYN asked the Secretary for War if the position of those officers and men who were at present undergoing treatment in those military hospitals that were to be taken over by the Ministry of Pensions on August 1st had been fully considered; whether it was proposed that patients were to be removed from those hospitals to others remaining under War Office control, in spite of the fact that their treatment was liable to be detrimentally affected if such transfer to nurses, doctors, and surgeons who had not supervised their cases from the first was carried out; and whether it was possible for the War Office and the Ministry of Pensions to come to such a financial understanding in regard to these cases that would permit these patients to remain undisturbed and to continue their treatment under the existing medical and nursing staff.—Mr. FORSTER (Financial Secretary to the War Office) replied: No transfer will take place when injury to the patient's health would be likely to be caused thereby.

Venereal Disease.

Mr. LUNN asked the Minister of Health whether inquests were required to be held after all cases of sudden death of persons undergoing treatment for venereal disease; and, if not, whether he would issue instructions with a view to securing that inquests should be held on all such cases in future.—Dr. ADDISON replied: Section 2 of the Coroners Act, 1887, requires an inquest to be held whenever there is a violent or unnatural death, or a sudden death of which the cause is unknown. There is no power under the statute enabling any Minister to issue instructions that inquests shall be held in any cases not covered by the section to which I have referred.

MONDAY, JULY 21ST.

Invalided Officer: Statement by Pensions Minister.

Mr. BOTTOMLEY asked the Pensions Minister whether he would give an explanation of the circumstances in which a lieutenant invalided out of the Army suffering from neurasthenia was recently directed by telegram, sent to a hotel at which he was staying, to proceed to the London Lock Hospital, Harrow-road, which was an institution for women suffering from venereal disease; whether, having been certified by two medical men employed at his own expense as free from such disease and having protested against being sent to the men's branch of the Lock Hospital, situated in Soho, to which he had been referred from the women's institution, he was informed by the Ministry of Pensions that an officer's unreasonable refusal to undergo treatment rendered him liable to have his pension reduced by half; whether he would say who was responsible for this course of action; and what reparation was being made to the officer in question.—Sir L. WORTHINGTON-EVANS replied: I am glad to have the opportunity of expressing publicly my deep regret for the annoyance and trouble given to this officer. The doctors are not able to decide affirmatively what is the cause of his illness. He was sent to a tuberculosis specialist and examined by him, but the report was negative; he advised that the officer should be admitted to hospital and kept under medical observation in case the illness was occasioned by general paralysis. Arrangements were made for a private room at the Lock Hospital, where it was intended that the specialist in general paralysis should make the desired observations so as to exclude general paralysis, as tuberculosis had been excluded, if such turned out to be the case. The telegram never ought to have been sent, although no serious consequence would have arisen if it had been opened by the officer. It was, however, opened at his request and read to him on the telephone by someone at his hotel. With regard to the letter the officer came to the Ministry after the letter was written and before it was delivered and saw one of the doctors. The doctor heard his explanation and withdrew the letter and apologised for the telegram. The letter ought not to have been sent, but being in the post could not be recalled. There was no question of unreasonable refusal to undergo treatment; no treatment had been decided upon. The officer was asked to go to the hospital for observation. Treatment could not be decided upon until after the result of the observation was known. The officer himself has since proved that there is not the slightest reason to suppose that he is suffering from general paralysis due to venereal disease. I fully accept that conclusion. The clerk at the Ministry who was responsible for the letter will not in future be engaged in this class of work, and steps have been taken to ensure that no warnings of withdrawal or reduction of pension shall be made until the case has been considered by a principal medical officer. I have myself seen this officer when he called at the Ministry. I have expressed to him my deep regret for both the telegram and the letter, and I have offered to refund to him the expenses to which he has been put in obtaining the medical certificates referred to. I explained to him what I have now told the House, and I trust that the blunder made by an administrative clerk will not discredit the really excellent and efficient work done for thousands of officers and men by the medical officers employed at the Ministry.

TUESDAY, JULY 22ND.

Case of Paralysis Agitans.

Mr. RAPER asked the Financial Secretary to the War Office if he would state what steps were being taken definitely to settle the compensation claim of Mr. Thomas Clark Barcliff, in view of the fact that Mr. Barcliff had been discharged as incurable from five hospitals and had also been declared to be suffering from paralysis agitans by every nerve specialist who had examined him.—Mr. FORSTER replied: Mr. Barcliff has received the maximum compensation payable under the scheme framed under the Injuries in War Compensation Act, 1914 (Section 2), which applies to his case. In the opinion of the Treasury medical referee Mr. Barcliff would benefit from a course of special treatment suitable for the malady from which he is suffering, and arrangements are being made for him to receive such treatment.

National Health Insurance Bill.

The House considered on Report the National Health Insurance Bill, which had passed through Standing Committee without amendment. The Bill was read a third time.

Medical News.

UNIVERSITY OF CAMBRIDGE: THE PSYCHOLOGICAL LABORATORY.—It has been decided by the managing committee for the Cambridge diploma in psychological medicine to recognise 12 months' clinical experience in a military neurological hospital as qualifying a candidate to enter for Part II. of the examination for this diploma. Part I. is open to all persons whose names are on the Medical Register. A course in preparation for these examinations will be held at the psychological laboratory, Cambridge, during August next. Information may be obtained by writing to Dr. J. P. Lowson, at the Psychological Laboratory.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the Royal College of Physicians of London was held on July 17th, Sir Norman Moore, the President, being in the chair. A letter was received from the Minister of Health, dated July 4th, inviting the College to place before him the names of persons who, in the opinion of the College, are specially suitable to serve upon the Consultative Council which will advise upon "Medical and Allied Services." A provisional list was laid before the College and approved.

LONDON UNIVERSITY.—The Senate has sanctioned the granting of the M.S. degree in two additional branches—namely: (1) ophthalmology; and (2) laryngology, otology, and rhinology; and the regulations have been modified in accordance with this decision.

UNIVERSITY OF EDINBURGH.—At the summer graduation ceremonial held on Thursday, July 10th, in the M'Ewan Hall, Edinburgh, the honorary degree of Doctor of Law was conferred upon Sir Thomas R. Fraser, F.R.S., emeritus professor of materia medica in the University, and upon Mr. Rutherford Morison, lately professor of surgery in the University of Durham.

The following degrees in Medicine were awarded:—

DOCTOR OF MEDICINE.

*Arthur Cecil Alport (in absentia), †Robert George Archibald, *Robert George Bannerman, Frederick Adolphus Fleming Barnardo (in absentia), †Edwin Bramwell, Frederick Russell Bremner (in absentia), Arthur William Treminheere Buist (in absentia), †Duncan Macnab Callender (in absentia), *Disney Hubert Dusch Cran, *Gerald Fitzgerald, Walter Benjamin Harry, Kenneth Goodall Hearne, James Burnett Hogarth, Matthew James Johnston, *Robert Lawson, Edward Loggie Middleton, Ronald Roderick Murray (in absentia), *William Henry Parkes (in absentia), Dhanavada Samuel Ramachandra Rao (in absentia), Archibald Romanes, Alan William Stuart Sichel, Robert Scott Stevenson, Samuel Henry Stewart, and *Edmund Leigh White.

* Commended for thesis. † Highly commended for thesis.

MASTER OF SURGERY.

James Methuen Graham (awarded gold medal for thesis).

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Henry Morris Anderson, Adam Armit, Alfred Badenoch, Harry Berelowitz, John James Rouse Binnie, Alice Bloomfield (first-class honours), Charles George Booker, Peter Martin Brodie (second-class honours), Cecil Carron Brown, Robert M'Call, Leybourne Stanley Patrick Davidson (first-class honours), Frederick John Deane, Arthur Armstrong Denham, Robert Lightbody Galloway, Kurt Gillis, Morris Goldberg (second-class honours), Arthur Trevenning Harris, Marjorie Harris, Cecil Edith Lyster Hole, Jiwanda Ram Katariya, Marjorie Hamilton King, Raymond Leslie Langley (first-class honours), Robert Kho Seng Lim, Harry Stephenson Lucraft (first-class honours), John Charles Macartney, James M'Intyre, Ella Grace Florence MacKenzie, Ronald Douglas Mackenzie, Robert Macnair, Mona Macnaughton, Elizabeth M'Vicker, Mabel Stevenson, Martin, George Henry Hope Maxwell (in absentia), Jacobus Hugo Meiring, Abraham Marais Moll, John Oliver Murray, Arthur Vincent Treadwell Musto, Edward Paul O'Dowd, Aerath Narayanan Nanoo Panikker, Clifford William Patterson, John Redwood Payn, Howard Sidney Plowman, Eric Haldane Ponder, Mary Simpson Poole (née Paterson), William Gordon Robson (second-class honours), Beatrice Annie Sybil Russell, Richard Sandilands, Mahmoud Zaky Sheriff, Bertie Soutar Simpson, William Augustus Slack, Valentine Alexander Stooks, Arthur Kinsey Towers, Maung Sein Tun, Petrus Cornelius Uys, Jakob Rudolph de Villiers, George Ronald Waller, Robert Boog Watson, Alfred George Norton Weatherhead, John Sinclair Westwater, James Leslie Wilson, and Duncan Ferguson Yuille.

SUMMER SCHOOL OF CIVICS AND EUGENICS.—The second Summer School of Civics and Eugenics, organised by the Civil and Moral Education League and the Eugenics Education Society, will be held at Cambridge during the fortnight from Saturday, August 2nd to 16th. The aim of the school is to give teachers, social workers, and others interested in educational and social reconstruction opportunities for study and discussion. The fee for the fortnight's course is 2 guineas. Board-residence varies from £2 2*s.* to £3 3*s.* The committee have at their disposal a small bursary fund, which is to be used to cover the expenses of such people as find themselves unable to defray the whole cost of their course at the school. Further particulars can be obtained from the Summer School Secretary, 11, Lincoln's Inn-fields, London, W.C. 2.

QUEEN'S UNIVERSITY OF BELFAST.—The Senate of Queen's University of Belfast on July 16th appointed Mr. A. W. Stewart, D.Sc., professor of chemistry, in place of the late Dr. A. Letts; Dr. Thomas Walmsley professor of anatomy, in place of Dr. J. Symington, resigned; and Dr. J. W. C. Gunn lecturer in pharmacology, in the vacancy created by the retirement of Sir William Whitla. All these new teachers come from Scotland, the first two from Glasgow University, the third from the University of Edinburgh. Dr. P. T. Crymble has been reappointed lecturer in applied anatomy. It was announced at the meeting that a sum of £8000 is to be placed by the Treasury at the disposal of Queen's University for expenditure during the current financial year on certain pressing wants (salaries of professors and lecturers, urgent improvements in various teaching departments, &c.). So far, it was said, no actual money had passed from the Treasury to the finance committee of the University.

DEVON RED CROSS AND VOLUNTARY AID ORGANISATION.—During the late war this association was responsible for the organisation of 34 hospitals and equipped 3905 beds, which received 45,007 patients, with a staff comprising 2735. The funds administered amounted to £261,585, the cost of administration being £1912.

BOGNOR WAR MEMORIAL COTTAGE HOSPITAL.—The Bognor War Memorial Cottage Hospital, towards which Mr. James Fleming gave £7000, was opened on July 16th. After a short dedication service Mrs. Fleming was presented with a silver key, with which she unlocked the door amid an enthusiastic scene. The hospital was formerly a large residence situated on the Chichester-road, and the greater part of the £7000 has been spent in its conversion into a hospital of 5 wards and 15 beds, with, of course, all the necessary concomitants. A roll of honour carved in oak, which will bear the names of all those from Bognor who have fallen in the war, has been placed in a conspicuous position in the entrance hall.

Dr. C. H. Browning, director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital, has been elected to the Gardiner Chair of Bacteriology in the University of Glasgow.

CROWNHILL CONVALESCENT HOME, NEAR PLYMOUTH.—The annual meeting of the friends of this institution was recently held under the presidency of Lord Mount Edgcumbe. It was stated that during the past year 149 patients had been admitted, about half the number in pre-war days. The financial statement was satisfactory. The chairman alluded to the excellent work of the home and reminded the subscribers that the charming building had been presented by Dr. C. A. Hingston.

THE LATE DR. B. A. PALMER.—The death is announced of Benjamin A. Palmer, M.B. Glasg., J.P., of Millvale House, co. Armagh, in the Newry Hospital. Dr. Palmer, an Armagh man, was born on March 30th, 1852. He studied in Glasgow, where he graduated M.B. in 1880, and became also L.R.C.S. Edin. In the same year he was appointed dispensary medical officer of the Crossmaglen District of the Castleblaney Union, a position he occupied until 1890, when he became medical officer of the Mullaghglass Dispensary District of the Newry Union, an office he held at the time of his decease. For over 33 years he was a justice of the peace for county Armagh, and for 11 years for the county of Down. Dr. Palmer was a well-known and much respected figure in the life of Newry and the surrounding district, and a large circle of friends and patients now mourn his loss. He leaves a widow and three daughters.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BAMFORD, Miss A., has been appointed House Surgeon to the North Devon Infirmary, Barnstaple.

GEFFEN, D. H., M.B., B.S. Lond., Second Assistant Medical Officer to the Marylebone Guardians.

GLAISTER, J., M.D. Glasg., one of the Medical Referees under the Workmen's Compensation Act for the Sheriffdoms of Ayr, Renfrew and Bute, and Stirling, Dumbarton, and Clackmannan.

HALLOWS, NORMAN F., M.D. Oxon., D.P.H., Medical Officer to Marlborough College, Wilts.

WADE, R., M.R.C.S., L.R.C.P., Assistant Administrator of Anæsthetics to St. Bartholomew's Hospital.

Certifying Surgeons under the Factory and Workshop Acts: ROBERTS, A. H., M.R.C.S., L.R.C.P. Lond. (Malling); WALKER, W. N., M.B., Ch.B. Dubl. (Manorcunningham and Letterkenny); WATSON, F. H., M.B., B.C. Cantab. (Sheerness).

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—First and Second Res. H.S.'s.
Bermondsey Medical Mission for Women and Children.—Med. Woman. £150.
Birmingham City—Municipal Bacteriologist. £700.
Birmingham General Hospital.—Asst. P. £50. Surgical Registrar. £200. Two Asst. S. £50. Also H.P., H.S., Obstet. H.S., H.S. to the Ear and Throat and Venereal Dep'ts. £100.
Birmingham, Rubery Hill Asylum and Annexe at Hollymoor.—Med. Supt. £1250.
Bolton, Townleys Hospitals, Farnworth, near Bolton.—Med. Supt. and Asst. Med. Supt.
Bournemouth, Royal Victoria and West Hants Hospital, Boscombe Branch.—Res. M.O. £250. Also Second Res. M.O. £200.
Cairo, Egyptian Government School of Medicine.—Professors and Lecturers. £E.1000 and £E.600. Also Radiologist and Lect. in Radiology, £E.500, Anæsthetist and Lect. in Anæsthetics, £E.500, and Registrar and Tutor, £E.600.
Canterbury, Kent and Canterbury Hospital.—Jun. Res. M.O. £150.
Cape Town University, Faculty of Medicine—Profs. of Medicine, Surgery, Obstetrics, and Gynæcology. £1250.
Cardiff, Glan Ely Hospital.—Asst. Res. M.O. £300.
Cheam, Surrey, St. Anthony's Hospital.—Res. M.O.
Coventry and Warwickshire Hospital.—Hon. Surg. Staff.
Devon and Cornwall Sanatorium for Consumptives, Didworthy, South Brent.—Female Asst. M.O. £200.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Dorset County Council—Asst. County M.O. £400.
Ely, Isle of Ely County Council.—Asst. Tuberc. O., M.O.H., and School M.O. £450.
Great Yarmouth Hospital.—H.S. £200.
Huddersfield County Borough Education Authority.—Full-time Dent. Surg. £350.
Hull Education Committee—Asst. Sch. M.O. £450.
Hull Royal Infirmary—Hon. P. and Two Hon. S.'s.
Kingston-upon-Thames Borough Education Committee.—School M.O. £300.
Leeds Public Dispensary, North-street.—Res. M.O. £200.
Leeds University.—Lect. in Experl. Phys. £500. Demonstr. in Phys. £250. Demonstr. in Hist. £250.
Leicester Poor-law Infirmary—Res. M.O. £250. Also Sec. Res. M.O.
Liverpool School of Tropical Medicine.—Asst. Lect. in Parasitology. £250.
Liverpool, Stanley Hospital.—H.P. and H.S.
Liverpool University.—Chair of Anatomy. £800.
Maidstone, Kent County Asylum.—Jun. Asst. M.O. £300.
Manchester, Ancoats Hospital.—H.P. £150. Also Hon. P. and Radiologist.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £100. Also Non-Res. M.O. £50.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Anæsth. £120. Also Four Non-Res. Anæsth. £50.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrators of Anatomy and Physiology. £350 to £500 and £300.
Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £300.
Newport, Mon., Royal Gwent Hospital.—Third Res. M.O. £200.
New Zealand—Path. and Bact. for Pub. Health Dept., Auckland, £700.
Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.
Queen Mary's Hospital for the East End, Stratford, E.—Asst. Hon. P.'s., Hon. Ophthal. S., and Hon. Aural S.
St. Helens County Borough.—Asst. M.O.H. £500.
Seychelles Government.—Asst. M.O. and Visiting Magistrate. Rs.5000.
Sheffield City Education Committee.—School Dent. Surgeons. £350.
Sheffield Royal Infirmary.—Asst. H.P. £150.
Smyrna Mission and Beaconsfield Memorial Hospital.—Medical Missionary. £250.
Taunton and Somerset Hospital.—Hon. S.
Taunton, Somerset and Bath Asylum, Cotford.—Asst. M.O. £300.
Tinewall, Whiteness, and Westdale Parish.—M.O. and Pub. Vac. £45.
Twickenham, St. John's Hospital.—Hon. Con. Surgeon.
West African Medical Staff.—Number of appointments. £400.
West Riding County Council, Treatment of Venereal Diseases.—Asst. £550. Also Sch. Oculist. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Soham (Cambridge).

Births, Marriages, and Deaths.

BIRTHS.

HARNETT.—On July 16th, at Devon House, Barnet, the wife of W. G. Harnett, M.A., M.D., of a son (stillborn).

MARRIAGES.

DUNCAN—MCEWAN.—On July 22nd, at St. Wilfrid's Church, Harrogate, William Henry Duncan, F.R.C.S. Edin., to Ida, elder daughter of Mr. and Mrs. J. H. McEwan, Crimple House, Harrogate.
ORR-EWING—ROSS.—On July 16th, at Parbold, Archibald Orr-Ewing, M.B., B.C. Cantab., to Gladys Mary, second daughter of Mr. and Mrs. Alex. Ross, of Clifton, Parbold.

DEATHS.

PEILE.—On July 14th, at Phillimore, Sidmouth, William Hall Peile, M.D., aged 50.
RANDALL.—At Park-street, Bridgend, Wyndham Randall, L.R.C.P. Edin., M.R.C.S. Eng., in his 73rd year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE BATHS OF OLD LONDON.

BY SEPTIMUS SUNDERLAND, M.D. BRUX.

PART III.

Spas, Wells, and Springs.

THE preceding account of the few baths of Old London, the former existence of which I have been able to trace, will be sufficient to show that some attempt was made to treat diseases of the skin by balneo-therapeusis in London during the past few centuries.

Spas.

But there remains something to be said about the spas and wells of Old London in connexion with bathing. During the time when existed the vogue of drinking the waters at the various London spas—roughly speaking, from the latter half of the seventeenth to the early period of the nineteenth century, no provision was made for bathing at these spas with the exception of one or two minor ones already mentioned; although in many instances, no doubt, the water was used locally by affusion. Those best known of the spas (the waters being taken internally) were: St. Chad's for "scrofula" (near the present King's Cross); Pancras, for "obstinate cases of scurvy, king's evil, leprosy, and all other skin diseases"; Powis Well (near the Foundling Hospital, Guilford-street), for "sore legs, inflammation of the eyes"; Sadler's Well for "scurvy"; Shadwell Spa for "scorbutic and cutaneous diseases" (by drinking or bathing); Hoxton Well for "those afflicted with wounds, ulcers, fistulas, sores, scabs, sore eyes, sore legs, leprosy," &c.; Marylebone Spa for "scorbutic disorders"; The Well in Restoration Spring Gardens (St. George's Fields) "for the cure of all cancerous and scorbutic tumours"; St. George's Spa, Lambeth, by Dr. John Fothergill in 1695 for "most cutaneous disorders and preventing cancerous affections"; Biggin Hill Spring, Norwood, for "scrofulous complaints." Sydenham Wells were referred to by Dr. John Peter as Lewisham Well. He wrote:—

"This water outwardly used is very good for most cutaneous distempers as leprosy, itch, scabs, pimples, ringworms, scurvy. It also dissolves tumours, and cureth old ulcers if the parts ill-affected be washed or bathed therewith, or if a curd made by boyling milk therewith be applied; and I am persuaded, it being used by way of a warm bath, it would be of great efficacy to consume hydropical tumours, to ease or cure gouty and rheumatic dolours, and far more effectual also in the above-said cutaneous distempers."

Springs and Wells.

Other old springs and wells of London which may be mentioned as having some connexion with the subject of dermatology, although they did not achieve the fame of being considered "spas," or even "spurious spas" are the following: "Crowder's Well (Cripplegate) "for sore eyes"; Highgate Spring "for bathing eyes"; St. Agnes Well, Hyde Park, "for bathing eyes"; Vauxhall Well "for eye troubles"; Ladywell, Lewisham, "for sore eyes"; East Sheen Well "for eye troubles and for bathing the legs."

Holy Wells.

I will not weary you by enumerating the names of the 23 so-called "Holy Wells" of London, about which I gathered information some years ago, although, of course, all the "Holy Wells" were attended by people suffering from skin troubles as well as from every other ailment.

Conclusion.

I do not know to what extent ordinary bathing and washing may prevent the acquirement of skin diseases, but assume that most modern dermatologists agree with Crocker's statement in the 1903 edition of his book that "the key-note of modern dermo-therapeutics is antisepticism." I imagine, therefore, that skin specialists approve of ordinary bathing and washing in moderation for people with healthy skins, with the hope of prevention of some at least of the various cutaneous disorders, in spite of the views of Dr. Samuel Johnson and of the apostle of the doctrine of vaccine treatment. Of course, everyone knows that bathing to excess and the use of certain soaps may cause skin irritation.

At the present day the value of bath treatment in phases of certain skin diseases is recognised and is recommended by dermatologists, but not, perhaps, to the extent that it may deserve. It is possible that in the near future, when the practice of hydrology will be systematically taught either in post-graduate courses or as part of the medical student's curriculum, that the attention of skin specialists will be still more directed to the subject, and that hydrological methods of treatment may be elaborated which will be even more beneficial to sufferers from skin diseases than those practised at the present time.

In conclusion, I should like to offer the suggestion that it might be advisable that a fuller investigation should be made by dermatologists on the effects of bath-treatment in skin diseases. It appears to me that its value may not be adequately recognised, that its possibilities may not have been sufficiently explored, and that no very earnest endeavours have been made of late years to attempt further progress.

To the Editor of THE LANCET.

SIR,—My good friend Septimus Sunderland, in his excellent description of the baths of Old London, refers to the bath in Strand Lane as a "Roman bath." In doing this he is only voicing the commonly received opinion. There is, however, no evidence that the bath dates back to Roman time. It does not resemble a Roman bath, which was, I believe, usually a square excavation in the floor, lined with tesselated pavement, and descended into by one or more steps; whereas the bath in Strand Lane, as Dr. Sunderland points out, resembles the ordinary plunge bath of modern times, but of large size. Moreover, it is very strange, as pointed out by Besant and others, that, if this bath is Roman, it is not mentioned by Stowe and other antiquaries.

I am, Sir, your faithfully,
S. D. CLIPPINGDALE.

Holland Park-avenue, W., July 21st, 1919.

HEALTH OF THE GERMAN NAVY DURING THE WAR.

WITH a few noteworthy exceptions German ships stayed in port during the war, so that the conditions of health obtaining among the personnel cannot have differed greatly from those of peace times. The daily ration strength of the German navy—the number of men in that navy—is calculated[1] to have been in the first year of the war, 202,123; in the second, 235,267; in the third, 254,347; and in the fourth, 383,071 men. Amongst these there came under treatment in each year ("new cases") per 1000, first year, 472; second year, 442; third year, 441; and fourth year, 497. As the average annual number, per 1000, for the five years before the war was 525, it appears that fewer men fell sick in the German navy in war than in peace. The increase in the figures for the fourth year is largely due to the influenza epidemic (92 cases per 1000). Tuberculosis of the lungs is the only disease quoted as more prevalent during the war (per 1000 before the war, 1·37 cases annually, during the war in successive years 1·45, 2·06, 2·81, and 2·09), while the mortality, too, was much increased (11·1 per cent. in the first year, 10·4 in the second, 13·6 in the third, and 18·4 in the fourth year) (August, 1917–August, 1918). The number of men killed at once, without medical treatment, is not mentioned, but of the sick and wounded who were seen by doctors 4073 died; also 5899 were invalided up to August 1st, 1918.

THE GAZETTE OF THE THIRD LONDON GENERAL HOSPITAL, WANDSWORTH.

AMONG the many publications which the various war hospitals have issued for the benefit of the patients and the amusement of both patients and public, the *Gazette* of the 3rd London Hospital holds a prominent place, and it is with feelings of regret that we announce its forty-sixth and last number, though that regret is tempered by the fact that the signing of Peace has rendered the hospital no longer necessary. The hospital, which has done most excellent service for the wounded, had from the first a wealth of artistic and literary talent among its staff and patients, and the *Gazette* has borne witness to the lavish way in which that staff has placed its talents at the disposal of the patients, and in providing for them and the public, under the past and present editors, Corporal Ward Muir and Sergeant Noël Irving, a magazine of high merit. This last and enlarged number maintains that high standard, and both as a souvenir of Peace and an entertaining journal is more than worth the 1s. which is charged for it. Many of the old contributors cater for this issue, Corporal J. H. Dowd illustrating among other productions the emotions of a hospital visitor on receiving final instructions from a disabled patient as to the writing of a letter: "Love to yourself and Babs. P.S. Please excuse the scribble."

COLONIAL HEALTH REPORTS.

Gilbert and Ellice Islands.—According to the official report for 1917–18 there were during the year in 12 of the islands of the Gilbert Group, having a population of 18,014, 579 births and 528 deaths. In two of the islands the deaths exceeded the births, there being 64 deaths to 44 births in Butaritari (population 1138) and 63 deaths to 25 births in Ocean Island (population 1100). In the latter instance the high death-rate, it is suggested, is largely due to the unnatural conditions under which the natives live and to the use of European foodstuffs, whilst the low birth-rate is attributed to "the scarcity of wives among the company's labourers." In seven islands of the Ellice Group (population 3131) there were 171 births and 95 deaths. Fanning Island reported 17 births and only 3 deaths. From certain other islands returns have not been received. The erection of the Central Leper Asylum on the island of Tarawa has been completed. It has not as yet been found possible to collect the lepers from the other islands owing to the lack of a Government vessel. Efforts are being made to charter a leper vessel from Australia. A suggestion has been put forward for an improved Government hospital for Ocean Island and for a water-borne drainage system for the native villages and Government station. The continued prevalence of dysentery on Ocean Island is causing anxiety. The native death-rate on that island is far too high, especially amongst the resident population as opposed to native imported labour. The following record of the rainfall at Ocean Island for the last five years shows the remarkable variation on the Line Islands:—

	Inches.		Inches.
1913–14	131·05	1916–17.....	6·63
1914–15	137·85	1917–18.....	26·62
1915–16	18·41		

The drought broke in May, 1918, and in the last two months of the year some 20 inches were recorded.

THE NATIONAL COUNCIL FOR THE UNMARRIED MOTHER AND HER CHILD.

THE annual report of the first year's work of this Council shows useful progress. The legal recommendations on the preventive side of the work as laid down at the Mansion House Congress in 1918 have resulted in the drafting of a Bill which is likely to form the basis of legislation, while the provisions of the Maternity and Child Welfare Act open up unlimited opportunities for the curative side of the work. Prejudice remains in certain quarters against helping the unmarried mother, but it is noteworthy that the constructive policy of the Council has evoked a large measure of sympathy in the efforts made to restore the mother to good citizenship, and to make effective the responsibilities of the father. The greater activities of the Council depend upon increased financial support, but, as at present constituted, the Council has no reliable source of income. Since its inception the work has depended very largely on the generosity of the honorary treasurer, Sir Charles Wakefield, but if the work is to continue generous financial help must be given. The British Red Cross Society has, we are glad to note, accepted an invitation to join the Central Council for Infant and Child Welfare, of which the National Council for the Unmarried Mother is a constituent part.

J. R. L. is advised to take counsel with one or two professional colleagues before acting.

Prevention of Hydrophobia.—A person who talks of the arguments of opponents as "imbecilic rot," and who states that "Pastuerism (*sic*) has been proved an utter imposture," clearly needs no reply.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. R. J. Albery, Lond.
B.—British Dental Association; Dr. A. Balfour, Lond.; Sir J. Barrett, Melbourne; Mr. J. B. Burke, Lond.; Board of Education; Sir J. W. Byers, Belfast; Dr. A. E. Boycott, Lond.; Col. R. J. Blackham, I.M.S.; British Fire Prevention Committee; Mr. I. Back, Lond.; Dr. Blondel, Paris.
C.—Dr. P. J. Cammidge, Lond.; Dr. F. G. Crookshank, Lond.; Mr. E. M. Cowell, Croydon; Dr. S. D. Clippingdale, Lond.; The Co-operative Sanatoria, Ltd., Billericay; Dr. J. R. Collins, Cheltenham; Dr. W. F. Croll, Aberdeen; Chief Inspector of Factories.
E.—Dr. R. Eager, Exminster.
F.—Mr. P. J. Franklin, Lond.; Dr. R. Fielding-Ould, Lond.
G.—Mr. B. Glendining, Aspley Guise; Mr. H. T. Gray, Lond.; Dr. Ida M. Guillaume, Torquay; Dr. W. E. Gallie, Lond.; Dr. R. Goodall, Whitchurch.
H.—Home Office; Mr. J. H. Hart, East Molesey; Lt.-Col. A. R. Henchley, R.A.M.C.; Prof. I. Walker Hall, Bristol.
J.—Mr. H. M. Johnston, Newcastle-on-Tyne.
K.—Dr. B. G. Klein, Chislehurst.
L.—Dr. A. Lewers, Melbourne; London War Pensions Committee; Liverpool Medical Institution, Sec. of; Livingstone College, Principal of.
M.—Dr. J. F. D. Macara, Lairg; Medical Guild, Hon. Sec. of; Mrs. M. McConnel, Petersfield; Ministry of Health, Sec. of; Miss A. R. Martin, Eastbourne.
N.—Mr. L. R. C. Norbury, Lond.; National Council for the Unmarried Mother, Hon. Secs. of.
R.—Royal Fern Company, Florida; Dr. W. C. Rivers, Barnsley; Registrar-General, Edinburgh.
S.—Dr. S. P. Sunderland, Lond.; Summer School of Civics and Eugenics; Société de Biologie, Paris; Dr. M. B. Shipsey, Birmingham; "Sea-Pie," Publishers of; Save the Children Fund, Lond.; Mr. S. Stephenson, Lond.; South London Hospital for Women, Sec. of; Colonel A. W. Sheen, A.M.S.
T.—Dr. A. H. Thompson, Lond.; Mr. O. P. Turner, Hastings; Mr. L. C. Thorburn, Lond.
W.—Dr. F. P. Weber, Lond.; Dr. L. A. Weatherly, Bournemouth; Dr. F. J. Waldo, Lond.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

[1] Arch. f. Schiff- und Tropen-Hygiene, xxiii., 7, p. 136.